Austin WATER

City of Austin

Report Vol. II

Austin Water Utility Cost of Service Rate Study 2008

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Pathways to Lasting Solutions

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

SECTION

1

Issue Papers

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Issue Paper# 1
Revenue Requirements

Subject: Determination of System Revenue Requirements

Date: December 12, 2007

Introduction

Setting rates for water and wastewater utilities requires a method of determining the amount of revenue the utility is allowed to recover from its customers. This amount is referred to as the utility's revenue requirements. This issue paper examines the alternative methods available to determine revenue requirements for Austin Water Utility (AWU).

Over time industry standards have evolved to guide practitioners in the development of revenue requirements.[1] The body of industry standards originated to provide the following:

1. Protection of consumers. Utilities are normally considered natural monopolies.[2] As such, utilities may have the ability to charge rates that exceed costs.[3]

2. Ensuring utilities have sufficient revenue to maintain the utility's value. This concern originated with investor-owned utilities that were subject to the regulation of the rates they charge their customers. If the revenue requirements are insufficient to generate profits, the value of the utility would decline and its owners would suffer a loss in wealth.

Review of Alternative Revenue Requirement Methodologies

In the water and wastewater industry there are generally accepted methods of determining a utility's revenue requirements. These methods are:

- Cash Basis

[1] See for example, Phillips, C.F., *The Regulation of Public Utilities,* (Arlington, Virginia: Public Utilities Reports, Inc., 1984) or Bonbright, J.C., and A.L. Danielsen and D.R. Kamerschen, *Principles of Public Utility Rates*, Second Edition, (Arlington, Virginia: Public Utilities Reports, Inc., 1988)

[2] A natural monopoly is a business in an industry where the marginal costs of producing additional output is lower than the average cost over the relevant range of demands. This results in the natural selection of one enterprise to dominate the industry eventually gathering large economies of scale that undercut its competition. Utilities are generally considered natural monopolies.

[3] The definition of economic costs includes a *normal profit* that is required to attract and maintain investment in the enterprise. In competitive markets, profits above normal profits attract competition and serve to return profits to a normal level. The opposite is also true. Profits below normal profits will encourage firms to exit from the industry. The exit of these firms will reduce supply and increase profits to more normal levels. This market function serves to allocate investments efficiently throughout the economy. Natural monopolies distort this market function since competition is ineffective.

- Utility Basis

A third method of determining revenue requirements exists that combine elements of the cash and utility basis. This method is referred to as the *Utility Basis with Cash Residual*. Each method is described below.

Cash Basis

Most municipally owned utilities are required to maintain a municipal-like budget where their revenue and expenses balance each year. Unlike an investor-owned utility, municipally owned utilities do not normally have access to sources of capital other than retained earnings and formally issued debt. Normally in these circumstances the total revenue from all customers must equal its budgeted expenses. This is the cash basis. The cash basis revenue requirements include:

- O&M expenses
- Debt service
- Capital expenditures (not debt financed)
- Increase in fund balances
- Taxes and other requirements

O&M Expenses

O&M expenses are the costs necessary to operate and maintain the utility's facilities and costs related to customer service and the administration of the utility. These expenses include expenditures for salaries, benefits, chemicals, power, maintenance, postage, and other typical operating expenses. O&M expenses exclude depreciation expense, taxes, and other expenditures that are capitalized rather than expensed. In some cases, capitalized overheads are included as an O&M expense, but generally these are capitalized and included in the costs of an improvement.

Debt Service

Debt service equals the principal and interest on outstanding debt.

Capital Expenditures

Utilities often make some capital expenditures from their operating funds without the use of long-term debt. Some utilities limit this to rolling stock and other minor capital expenditures. Others use capital expenditures as a way to manage the overall financial health of the utility by maintaining certain financial policies[4] on the utility's capital structure (e.g., debt/equity ratios, bond debt service coverage, etc.)

[4] AWU's financial policies require a debt service coverage ratio of 1.50 and 20 percent equity financing of capital improvements.

Increase in Fund Balances

Utilities may maintain financial policies on capital structure by varying the amount of reserves maintained. In this context, reserves are the cash balances available to the utility from one year to the next. An example of changes in fund balances might include:

- Establishing a capital reserve fund to cash finance future capital projects, thereby reducing future borrowing needs.
- Increasing operating reserves to enhance the utility's ability to maintain programs during periods of lower than expected revenue or higher than expected expenses.
- Establishing debt service reserves as required by certain bond covenants or to maintain debt service coverage ratios.
- Other similar purposes.

These increases in fund balances either offset or increase the revenue required from the utility's customers.

Taxes and Other Requirements

Like other business, taxes and other requirements are assessed to utilities for multiple purposes. To ensure the utility's total costs are recovered, these taxes are generally included in the revenue requirements. Taxes and other requirements may include gross receipts taxes, franchise fees, transfers to municipal general funds, payments in lieu of taxes, etc.

Utility Basis

The utility basis is a method of determining revenue requirements that is similar to the methods used by investor-owned utilities. Under the utility basis, a utility's revenue requires include:

- O&M expenses
- Return on rate base (i.e., return on investment for the assets used by the utility's customers),
- Depreciation expense
- Taxes and other requirements

O&M Expenses

O&M expenses under the utility basis are the same as those under the cash basis.

Return on Rate Base

When a municipally owned utility provides service, it (and, by extension, its customers) undertakes financial and other risks similar to that of investor-owned utilities. To compensate for these risks, the utility charges its customers a fair rate of return on its investment to serve customers. A fair rate of return is assumed to be a return that could be earned by investing the owner's money[5] in a comparable investment which has similar risk. The rate of return is often referred to as the cost of capital. It is often calculated using a weighted average of the utility's cost of debt and equity.

The rate base itself is not a user charge revenue requirement under the utility basis. The rate base is simply the value of the assets that are used and useful to a particular customer class or group of customer classes. Adjustments to the rate base may be made for construction-work-in-progress (CWIP) and/or an allowance for working capital. To determine the revenue requirement under the utility basis, a rate of return is applied to the rate base.

Depreciation Expense

Depreciation expense is the annual depreciation on fixed assets that are used to provide services to the utility's customers. These expenses are included in the revenue requirements to allow the utility to recover its initial capital investment.

Generally depreciation expense is calculated using the straight-line method assuming the accounting definitions of useful lives. If contributed capital is amortized, the amortization expenses are often subtracted from the depreciation expense for ratemaking purposes[6].

Taxes and Other Requirements

Taxes and other requirements under the utility basis are the same as those under the cash basis.

Utility Basis with Cash Residual

The *Utility Basis with Cash Residual* is a modification of the utility basis for municipally owned utility that must meet a balanced budget requirement. This approach is essentially a hybrid of the cash and utility basis. Under this approach, the overall revenue requirements are set to recover the cash basis requirements. The utility basis is used to determine the revenue requirements for the non-owner customers using a fair rate of return determined by external factors (e.g., weighted average cost of capital).

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[5] For a municipally owned utility like AWU, the owners are typically the customers who live within the City's corporate boundaries.

[6] When capital is contributed by a customer class, the utility normally treats this as *cost-free capital.* No return is earned on the contributed capital and the amortization expense is not included in the revenue requirements. If the contributed capital is amortized, and the assets acquired by the contribution are also depreciated, an adjustment to the depreciation expense is required to ensure the utility does not over recover its investment. With contributed capital, the utility did not make the initial investment (it was contributed), and therefore no capital recovery (i.e., deprecation expense) is required.

The residual revenue requirement (i.e., the difference between the total cash basis revenue requirements and the utility basis revenue requirements for non-owner customers) is recovered from owner customers using the cash basis[7].

Table 1 presents a hypothetical comparison of revenue requirements for AWU using each of the three approaches described above.

Table 1
City of Austin - Water Utility
Hypothetical Revenue Requirements
FY2007-08 Preliminary Budget

Item	Cash Basis	Utility Basis	Utility Basis with Cash Residual
Operation & Maintenance Expense	$79,127,008	$79,127,008	$79,127,008
Principal & Interest on Debt	76,636,711		
Annual Replacements, Extensions, and Improvements from Revenue	23,525,000		
Depreciation Expense		30,242,924	30,242,924
Return - Operating Income[1, 2, 3]		81,362,654	69,918,787
Other Revenue	(3,747,291)	(3,747,291)	(3,747,291)
	---------------	---------------	---------------
Total Revenue Requirements	$175,541,428	$186,985,295	$175,541,428

[1]Assumed allowance for working capital as percent of recurring O&M	12.5%
[2]Assumed rate of return for utility basis:	9.0%
[3]Calculated rate of return for utility basis with cash residual:	7.7%

Methodological Options Under Review

When considering the issue of revenue requirements, the following methodological options are important to consider:

1. Which is the most appropriate overall method for determining revenue requirements?

2. How should future O&M expenses be projected?

3. How should the rate of return be determined?

[7] In practice, the cash basis revenue requirements are generally recovered by determining a separate rate of return for owner customers that fully recovers the residual revenue requirements.

4. How should the rate base be valued?

5. How should construction work in progress be treated in determining rate base?

Each of these issues is explored further in the following section. The discussion for each issue includes:

- Overview of the issue
- Description of the alternatives
- Evaluation of the alternatives using the executive team's evaluation criteria
- Consultant's preliminary findings and recommendations

After presentation to the executive team and public involvement committee, the consulting team will finalize its recommendations.

Issue 1: Which method of determining revenue requirements is most appropriate?

Overview of the Issue

The first revenue requirement policy issue to resolve is which industry standard approach to determining revenue requirements is best for AWU and its customers. The alternative selected will determine the method of setting the total revenue recovered from the cost-of-service analyses.

Description of Alternatives

The three available alternative methodologies are:

1. Cash basis
2. Utility basis
3. Utility basis with cash residual

These methods are fully described in the earlier section of this issue paper.

The primary difference among the alternatives is the concept of ownership and the method of consumer protection. Under the cash basis, consumer protection is provided by the budgeting oversight of the elected officials. These officials act both as a representative of the customers and the utility. Most often, the elected officials are elected by the citizens that act as the owners of the utility. Under this approach, ownership and consumer protection are combined into one elected body.

Under the utility basis, the consumer protection is often provided by public utility commissions or public service commissions. These regulatory bodies establish rates of return that provide consumer protection.

In situations where municipally owned utilities provide services to customers outside their corporate jurisdictions, consumer protection is often provided by explicit contractual agreements that specify the conditions under which utility rates are determined. This is the situation most commonly found when the *Utility Basis with Cash Residual* method is used.

Evaluation of Alternatives

Attachment A presents the weighted evaluations of the alternatives.[8]

When considering implementation, the cash basis alternative is generally preferred over the utility basis or utility basis with cash residual. Both techniques that use a rate base (i.e., the utility basis and the utility basis with cash residual) require administrative efforts to develop and maintain a detailed rate base. An additional burden is placed on the utility basis with cash residual to track the rate base with greater precision to properly categorize assets as inside or outside the City. These data requirements also impact the risk of implementation.

From an equity standpoint, the three alternative methods are similar with the exception of inter-generational equity. The utility basis is somewhat better at matching the cost of providing facilities with those who use them. The utility basis approaches spread the cost of an asset appropriately into the future by charging future customers their share of depreciation expense.

Like the equity criteria, the customer criteria were not influenced greatly by the method of determining revenue requirements. Those criteria depending on the total cost of utility services (i.e., affordability and economic development) did not vary since the total cost of utility services, in the long run, will be quite similar. The costs will depend on the external factors like future regulations and operating expenses.

For similar reasons, long-term conservation impacts are likely immune to changes in the method of determining revenue requirements.

The financial criteria offered more variation in evaluations. Revenue sufficiency was lower for the utility basis since the use of an externally generated rate of return may not necessarily generate the cash needs of the utility.

[8] The weights for the criteria used in these evaluations are those of the consultant and have not been adjusted to reflect the executive team's weights. The executive team's weights will be incorporated into the analysis after the weights have been determined.

Revenue stability is largely a measure of the impact of weather on utility revenue and is therefore less important to evaluating methods of determining revenue requirements.

Rate stability and rate predictability are correlated in this evaluation. In both cases, the utility basis generated the more stable and predicable rates. That outcome is a direct result of the requirement that the utility recover its investment over time using a rate of return and depreciation. This result may be mitigated by the use of predictive financial planning tools that allows the utility to gradually increase rates in anticipation of future capital requirements. In the case where rates are gradually increased, the cash basis may actually be more stable and predictable.

The cash basis reduces financial risks to the utility. This reduction in financial risk is primarily accomplished by ensuring revenue are sufficient to meet the cash needs of the utility. Unlike investor-owned utilities, municipal utilities do not have access to equity markets to allocate risks and accommodate financial shortfalls.

Preliminary Findings and Recommendations

The consulting team recommends AWU use the cash basis for determining revenue requirements. This method is consistent with current practices and requires data that are readily available and dependable.

Issue 2: How should future O&M expenses be projected?

Overview of the Issue

All three methods of determining revenue requirements include an amount to recover O&M expenses. The method of projecting the O&M expenses will influence the total revenue requirements.

Description of Alternatives

Two alternatives are generally considered in projecting O&M expenses. These are:

- Historical test year with adjustments for known and measurable changes
- Future budgeted O&M expenses

Under the first alternative, the allowance for O&M expenses is determined by using actual expenditures during a recent 12-month period for which detailed expenditure records are available. Because of the intricacies of municipal budgeting requirements, the 12-month period is generally the most recently completed fiscal year. The expenditures during the historical test year are then adjusted for what are called *known and measurable changes.* These adjustments to historical costs typically include allowances for changes in labor agreements, changes in utility rates, etc.

The alternative approach is to project future O&M expenses based on the utility's adopted annual budget. This approach depends on the municipal budgeting process to evaluate the reasonableness of projections of future O&M expenditures.

The compatibility of the methods used to project future O&M expenses may vary depending on the overall approach used to determine revenue requirements (i.e., cash basis, utility basis, and utility basis with cash residual.) One potential criticism of using the budget to project future O&M expenses is that municipal utilities generally cannot exceed their budget authorization. This restriction would indicate that budgeted O&M would exceed actual O&M. When the utility is on the cash basis, however, unspent O&M expenses would result in additional ending fund cash balances which would be available to offset future O&M expenses or capital expenditures.

Evaluation of Alternatives

Using the future budget has fewer implementation issues than the historical test year. Regardless of the findings of this study, AWU will still be required to comply with the City's overall budgeting procedures. Using this procedure for setting rates requires little to no additional administrative effort.

There is no discernable difference between the alternatives in terms of criteria for equity, customer, and conservation.

Also, because of the requirement to maintain a balanced budget, the future budget approach is more certain to meet the revenue sufficiency criterion. Using a historical test year is less flexible than future budget in addressing prior years that have unusually high or low water sales. For the same reasons, the future budget approach presents less financial risk to the utility.

The historical test year may result in more predictable rates in the very short run. However, this advantage is mitigated if the City incorporates financial planning efforts to reduce the future impacts of O&M cost increases.

Preliminary Findings and Recommendations

The consulting team recommends the utility use the future budget to project O&M expenses. This recommendation should be reconsidered if AWU uses something other than the cash basis to determine revenue requirements.

The future budget approach is more consistent with the municipal nature of AWU's operations than the historical test year.

Issue 3: How should the rate of return be determined?

Overview of the Issue

When using either the utility basis or utility basis with cash residual method of determining revenue requirements, the utility must determine its rate of return. This process can be extremely controversial since the impact on non-owner customers and the utility can be significant.

Regulated utilities generally are required to determine the rate of return based on their weighted average cost of capital. This approach is designed to meet the unique needs of regulated utilities that are subject to economic regulation.[9] If economic or market conditions change, the rates charged by the utility may need adjustment to maintain an equitable value of the company's shares.

This issue is relevant only if the utility basis or utility basis with cash residual is chosen. If AWU uses the cash basis there is no need to determine a rate of return and this issue is irrelevant.

Description of Alternatives

Three alternatives are evaluated for determining the revenue requirements. These are:

- Weighted average cost of capital
- Indexed return
- Fixed return

The weighted average cost of capital is the typical approach used by regulated utilities. Under the weighted average cost of capital, the rate of return has two components. The first component is an allowance for debt. The return allowed for the allowance for debt is based on the effective interest rate on debt.[10] The second component is the return ascribed to equity. This return is calculated using sophisticated financial models that evaluate the relative risks associated with investing in an enterprise with comparable risks. The two components are weighted based on the percentage of the value of the utility provided by debt versus equity.

[9] Economic regulation is the approach used to ensure that investor-owned utilities earn a fair return but do not exploit their position as a natural monopolist. The standards for a fair rate of return commonly include the requirement that the utility earn profits at a rate comparable to other investors with similar risks and that the utility will attract sufficient capital to maintain its economic viability and value. These standards are less important to municipal utilities since municipal utilities do not have a requirement to maintain the price of their traded shares. Changing market and economic conditions can adversely affect consumers and/or shareholders and are generally reviewed when a regulated utility presents its rates for adjustment to its economic regulator.

[10] The effective interest rate on debt normally includes adjustments for the amortization of issuance costs and other similar expenses.

The indexed return is a simpler method commonly used by municipal utilities that do not have easily evaluated costs for equity. Under this simple approach, the utility adopts an index with an allowance for equity. For example, the utility may tie its rate of return to the return on a municipal bond index with an allowance of 200 basis points[11] to account for additional risk associated with equity. If the bond index had an effective return of 4.5 percent, the rate of return would be set at 6.5 percent (i.e., 4.5 percent plus 2.0 percent equals 6.5 percent.) If the return for the bond index dropped to 4.0 percent, the rate of return used by the utility would be reduced to 6.0 percent. Similarly, if the return for the bond index rose to 5.0 percent, the rate of return used by the utility would increase to 7 percent.

The last alternative is a fixed rate of return. A fixed rate of return is generally used when a utility provides service on a wholesale basis to another utility. Under a fixed rate of return, the utility sets its return when it establishes its agreement with its wholesale customer. This return is fixed for the term of the agreement.

Evaluation of Alternatives

This issue is only relevant if the utility uses a method of determining revenue requirements that relies on a rate of return. If the utility uses the cash basis, this issue is irrelevant.

The fixed return is most easily implemented and administered. This approach requires agreement at the time of contracting with a wholesale customer. The weighted average cost of capital tends to be complex and not well understood by the public. Also, both the weighted average cost of capital and the indexed return can present political acceptance problems if retail rates rise because of a general decline in interest rates or the cost of equity in the economy. Similarly, increases in interest rates or the cost of equity can result in increases in rates to wholesale customers that can appear to the public to be unrelated to the costs of providing the utility service. For these reasons, those approaches can seem unacceptable.

Equity concerns are not generally impacted by the approach to determining the rate of return. However, the use of the weighted average cost of capital and the indexed return are more commonly found in the industry than the fixed return. For that reason, we have rated those approaches more highly for industry standard.

For the customer category, only the rate shock/volatility differs for the alternatives. Because the fixed return is fixed, it provides less rate shock and volatility. Both the weighted average cost of capital and the indexed return change as market conditions change. This volatility in the rate of return will impact the rate of return, and therefore, the rates charged customers.

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[11] A *basis point* is one one-hundredth of a percentage point. Therefore, 100 basis points equal 1 percent point.

The conservation criteria do not vary based on the alternative.

Because the fixed return has less volatility, it generally meets the financial criteria better than the other options. Depending on the index chosen, the volatility could be more or less than the weighted average cost of capital. Generally the weighted average cost of capital is less volatile than the indexed return because most utilities effective interest rate on debt does not vary much from year to year. But this general observation is not absolute. Given the assumptions on volatility, the indexed return fairs more poorly for the revenue stability, rate stability, rate predictability, and financial risk criteria.

Preliminary Findings and Recommendations

If the utility uses a revenue requirement method that includes a rate of return, the consultants recommend establishing a fixed rate of return. A fixed rate of return minimizes the volatility in revenue requirements and reduces the overall uncertainty for both owner and non-owner customers.

Issue 4: How should the rate base be valued?

Overview of the Issue

When using the utility basis or utility basis with cash residual, the utility must establish an approach to valuing the assets that serve its customers. During periods of high inflation, some utilities adopted an approach to value their fixed assets at reproduction costs rather than original costs. Under both alternatives, the value of the accumulated depreciation (at reproduction cost or original cost, as appropriate) is subtracted to provide the rate base.

These utilities restate their rate bases at reproduction costs to account for the impact that inflation has on the cost of replacing infrastructure. Generally as inflation rates declined during the 1980s, the interest in using reproduction costs for rate base also declined. Recent increases in the price for construction materials may prompt interest in this issue.

When the reproduction cost approach is used, the rate of return is generally reduced to exclude an inflationary component. This ensures the utility does not over collect as the cost of its rate base is restated due to inflation.

Description of Alternatives

Two alternatives are examined here. The first is the traditional original cost approach. Under the original cost approach, the rate base is set at the net book value of the assets that are used and useful in providing utility services. The net book value is determined by subtracting the accumulated depreciation from the original cost.[12]

[12] Other adjustments for contributed capital and construction work in progress are also included.

The second approach is to use the reproduction costs to determine the value of rate base. Under this approach, the reproduction costs would be net of accumulated depreciation (calculated at reproduction costs.) Also, the rate of return would be reduced to exclude an allowance for inflation. In other words, the rate of return would be a *real rate of return.*

Evaluation of Alternatives

For the implementation criteria, the original cost is preferred to the reproduction costs. The original cost approach is consistent with standard accounting techniques and does not require the estimation of the reproduction cost of the utility's fixed assets.

The original cost is likely more equitable to inside/outside customers since it more closely matches the utilities actual cost of service. Also, original cost more closely follows industry standards.

When considering the impact on customers, the reproduction cost may be more volatile and have greater rate shock if we experience periods of higher inflation. Otherwise we would not expect differences for the other customer criteria.

The conservation criteria do not vary based on these alternatives.

When considering the financial criteria, reproduction costs may provide greater revenue than original cost during periods of higher inflation. This greater revenue during periods of higher inflation would likely improve revenue sufficiency. The other financial criteria favor original cost since it is likely to be less volatile than the reproduction costs.

Preliminary Findings and Recommendations

If a determination of rate base is required, the consultants recommend the use of original cost to determine rate base.

Issue 5: How should construction work in progress be treated?

Overview of the Issue

Construction work in progress (CWIP) is the value of expenditures the utility has made in construction projects that have not been completed, and therefore, are not included as a fixed asset on the utility's books. Regardless of the status of booking the assets, the utility has carrying costs for these expenditures and the treatment of those carrying costs is the issue examined here.

Generally the carrying cost for CWIP is the interest expense (or interest earnings forgone) by having spent money on the project under construction. The longer the construction period is the greater the carrying costs will be, and the more important this issue will be.

This issue is only important if the utility uses either the utility basis or the utility basis with cash residual method of determining revenue requirements.

Description of Alternatives

Two alternatives are available for treating CWIP in the utility's rate base. The first option is to capitalize the interest during construction and include the capitalized interest in the asset value. Under this approach, the utility recovers the carrying cost of the CWIP over the life of the asset and earns a return on the outstanding investment in the carrying costs.

The second approach is to include CWIP in the rate base and allow the utility to earn a rate of return on CWIP during the construction itself.

The difference between the two approaches is primarily one of timing of receipt of the carrying costs and the impact that timing has on inter-generational equity. Generally, capitalizing the carrying costs spreads the carrying costs to those future users that benefit from the asset but delays the recovery of the investment by the utility.

Evaluation of Alternatives

Of the two options in treating CWIP, the capitalized interest normally presents the least administrative burden since it normally conforms more closely with typical accounting practices that use *Allowance for Funds Used During Construction (AFUDC)* to add the carrying costs of CWIP to the asset value.[13] If CWIP is included in rate base, the utility may be required to maintain separate values of the assets net of the capitalized interest. This requirement may add to the administrative burden of including CWIP in rate base as compared to capitalizing the interest.

Public understanding and public and political acceptance may be enhanced by including CWIP in the rate base. This allows the utility to more quickly earn a return on the project and may help offset the cash flow requirements during construction. This is particularly important for complex construction projects that span significant amounts of time.

Because capitalized interest is a more common approach it is likely to have less risk of implementation. Both approaches are legally defensible.

From an equity perspective, the capitalized interest approach is better at meeting the inter-generational, inside/outside city, and industry standards criteria. It better addresses

[13] Typically when capitalizing an asset, utilities add the AFUDC and other costs (such as capitalized overhead) to the value of the asset being capitalized. This results in a value more closely related to the actual cost of placing the asset in service.

the intergenerational criterion since it allocates the carrying cost of the construction project over time to those that benefit from the project. Also, it generally protects the interest of non-owner customers better since the rates charged to them only include charges for assets that are used by them. This is especially important if the non-owner customer may terminate its relationship with the utility before the asset in question is fully depreciated. Capitalized interest is also more common in the industry than including CWIP in rate base.

The only customer criteria relevant to the issue of CWIP is the rate shock/volatility criterion. Including CWIP in rate base tends to increase the rate base more gradually than waiting until the project is complete before adding it to rate base. This more gradual introduction of the asset value into the rate base tends to reduce rate shock and volatility.

The conservation criteria do not vary based on these alternatives.

The financial criteria all tend to favor including CWIP in the utility's rate base. Including CWIP in rate base increases the cash flow during the construction phase of the project. This additional cash flow improves revenue sufficiency and stability. It also reduces financial risks.

Also, adding CWIP to the rate base as the construction progresses reduces the impact that completing the project has on rate base. This easing of the impact helps improve rate stability and rate predictability.

Preliminary Findings and Recommendations

The consultants recommend using the capitalize interest approach to treat CWIP in the rate base. This approach follows industry standards, provides greater inter-generational equity, and is consistent with most utility's fixed asset accounting policies.

City of Austin
Issue Paper# 1: Revenue Requirements

Attachment

A

Evaluations of Alternatives

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Evaluations Based on Average Ratings

Selection of Revenue Requirement Methodology

Average Ratings
Selection of Revenue Requirement Methodology

	Implementation				
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**
Cash Basis	9.3	8.0	8.0	9.3	8.0
Utility Basis	6.7	5.3	8.0	4.0	8.0
Utility Basis with Cash Residual	4.0	4.0	8.0	4.0	8.0
Rate from 0 to 10 (10 most preferred)	5.6	7.0	8.4	8.4	9.8

	Equity				
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**
Cash Basis	8.0	8.0	4.0	8.0	8.0
Utility Basis	8.0	8.0	6.7	8.0	8.0
Utility Basis with Cash Residual	8.0	8.0	5.3	8.0	8.0
Rate from 0 to 10 (10 most preferred)	8.4	8.4	5.6	8.4	5.6

	Customer				
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**	
Cash Basis	8.0	8.0	5.3	8.0	
Utility Basis	8.0	8.0	8.0	8.0	
Utility Basis with Cash Residual	8.0	8.0	6.7	8.0	
Rate from 0 to 10 (10 most preferred)	7.0	7.0	7.0	7.0	

	Conservation				
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**	
Cash Basis	8.0	8.0	8.0	8.0	
Utility Basis	8.0	8.0	8.0	8.0	
Utility Basis with Cash Residual	8.0	8.0	8.0	8.0	
Rate from 0 to 10 (10 most preferred)	5.6	7.0	9.8	7.0	

	Financial				
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**
Cash Basis	9.3	8.0	5.3	5.3	9.3
Utility Basis	5.3	8.0	8.0	8.0	5.3
Utility Basis with Cash Residual	8.0	8.0	6.7	6.7	6.7
Rate from 0 to 10 (10 most preferred)	5.6	8.4	7.0	7.0	9.8

Alternatives	**Weighted Average Score**
Cash Basis	1,319
Utility Basis	1,251
Utility Basis with Cash Residual	1,219

Evaluations Based on Average Ratings

Method of Projecting O&M Expenses

	Implementation				
Alternatives	**Administrative Burden**	**Public Understanding**	**Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**
Historical Test Year					
Future Budget					
Ratings					

	Equity				
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**
Historical Test Year					
Future Budget					
Ratings					

	Customer				
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**	
Historical Test Year					
Future Budget					
Ratings					

	Conservation				
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**	
Historical Test Year					
Future Budget					
Ratings					

	Financial				
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**
Historical Test Year					
Future Budget					
Ratings					

Alternatives	**Weighted Average Score**
Historical Test Year	
Future Budget	

Average Ratings
Method of Projecting O&M Expenses

Alternatives	Implementation: Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility
Historical Test Year	5.9	5.9	7.4	5.9	7.4
Future Budget	8.8	8.8	7.4	8.8	7.4
Rate from 0 to 10 (10 most preferred)	5.6	7.0	8.4	8.4	9.8

Alternatives	Equity: Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards
Historical Test Year	7.4	7.4	7.4	7.4	7.4
Future Budget	7.4	7.4	7.4	7.4	7.4
Rate from 0 to 10 (10 most preferred)	8.4	8.4	5.6	8.4	5.6

Alternatives	Customer: Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill	
Historical Test Year	7.4	7.4	7.4	7.4	
Future Budget	7.4	7.4	7.4	7.4	
Rate from 0 to 10 (10 most preferred)	7.0	7.0	7.0	7.0	

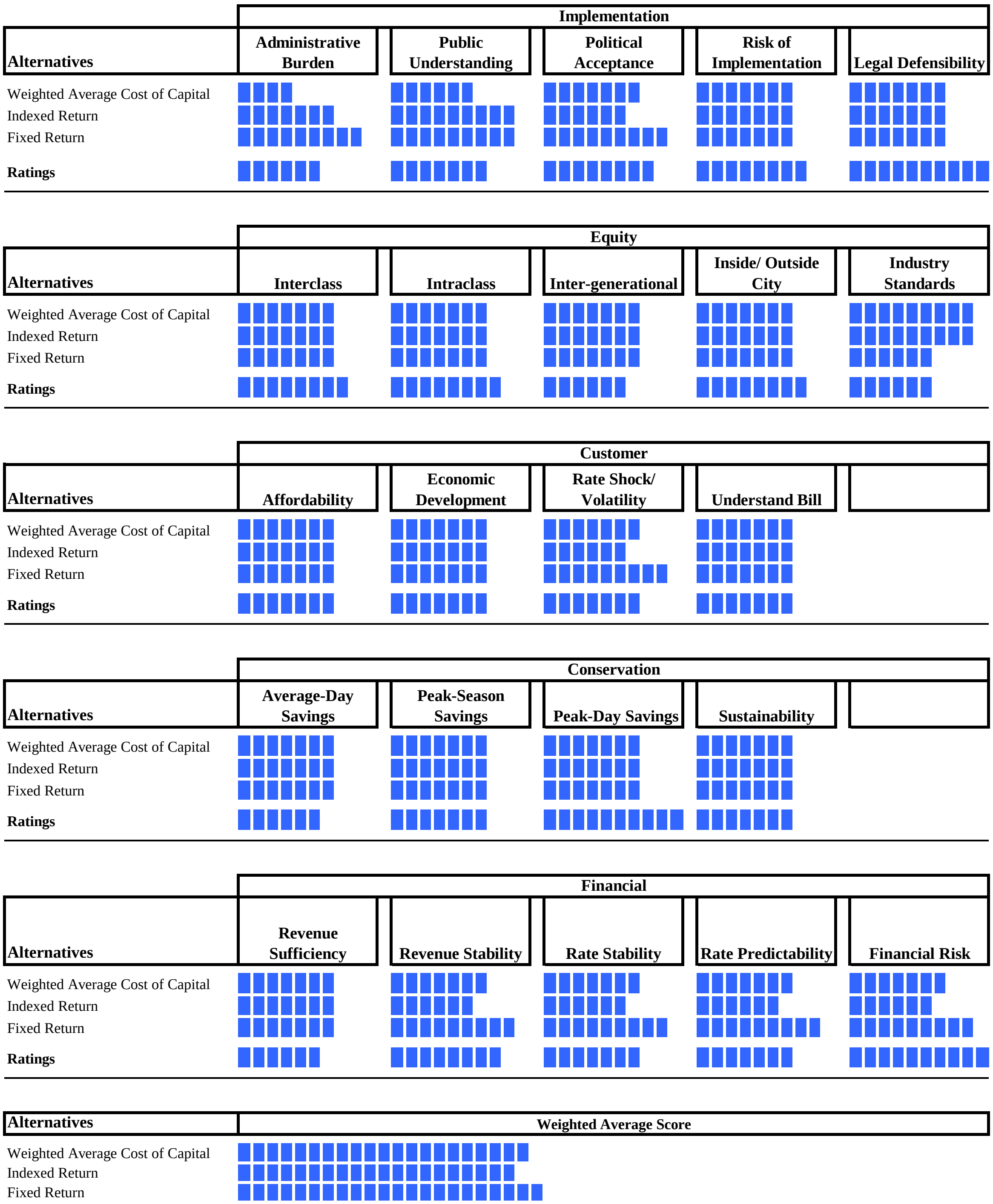
Alternatives	Conservation: Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability	
Historical Test Year	7.4	7.4	7.4	7.4	
Future Budget	7.4	7.4	7.4	7.4	
Rate from 0 to 10 (10 most preferred)	5.6	7.0	9.8	7.0	

Alternatives	Financial: Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk
Historical Test Year	5.9	7.4	7.4	8.8	5.9
Future Budget	8.8	7.4	7.4	7.4	8.8
Rate from 0 to 10 (10 most preferred)	5.6	8.4	7.0	7.0	9.8

Alternatives	Weighted Average Score
Historical Test Year	1,208
Future Budget	1,304

Evaluations Based on Average Ratings

Determination of Rate of Return



Average Ratings
Determination of Rate of Return

	Implementation				
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**
Weighted Average Cost of Capital	4.4	5.9	7.4	7.4	7.4
Indexed Return	7.4	8.8	5.9	7.4	7.4
Fixed Return	8.8	8.8	8.8	7.4	7.4
Rate from 0 to 10 (10 most preferred)	5.6	7.0	8.4	8.4	9.8

	Equity				
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**
Weighted Average Cost of Capital	7.4	7.4	7.4	7.4	8.8
Indexed Return	7.4	7.4	7.4	7.4	8.8
Fixed Return	7.4	7.4	7.4	7.4	5.9
Rate from 0 to 10 (10 most preferred)	8.4	8.4	5.6	8.4	5.6

	Customer				
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**	
Weighted Average Cost of Capital	7.4	7.4	7.4	7.4	
Indexed Return	7.4	7.4	5.9	7.4	
Fixed Return	7.4	7.4	8.8	7.4	
Rate from 0 to 10 (10 most preferred)	7.0	7.0	7.0	7.0	

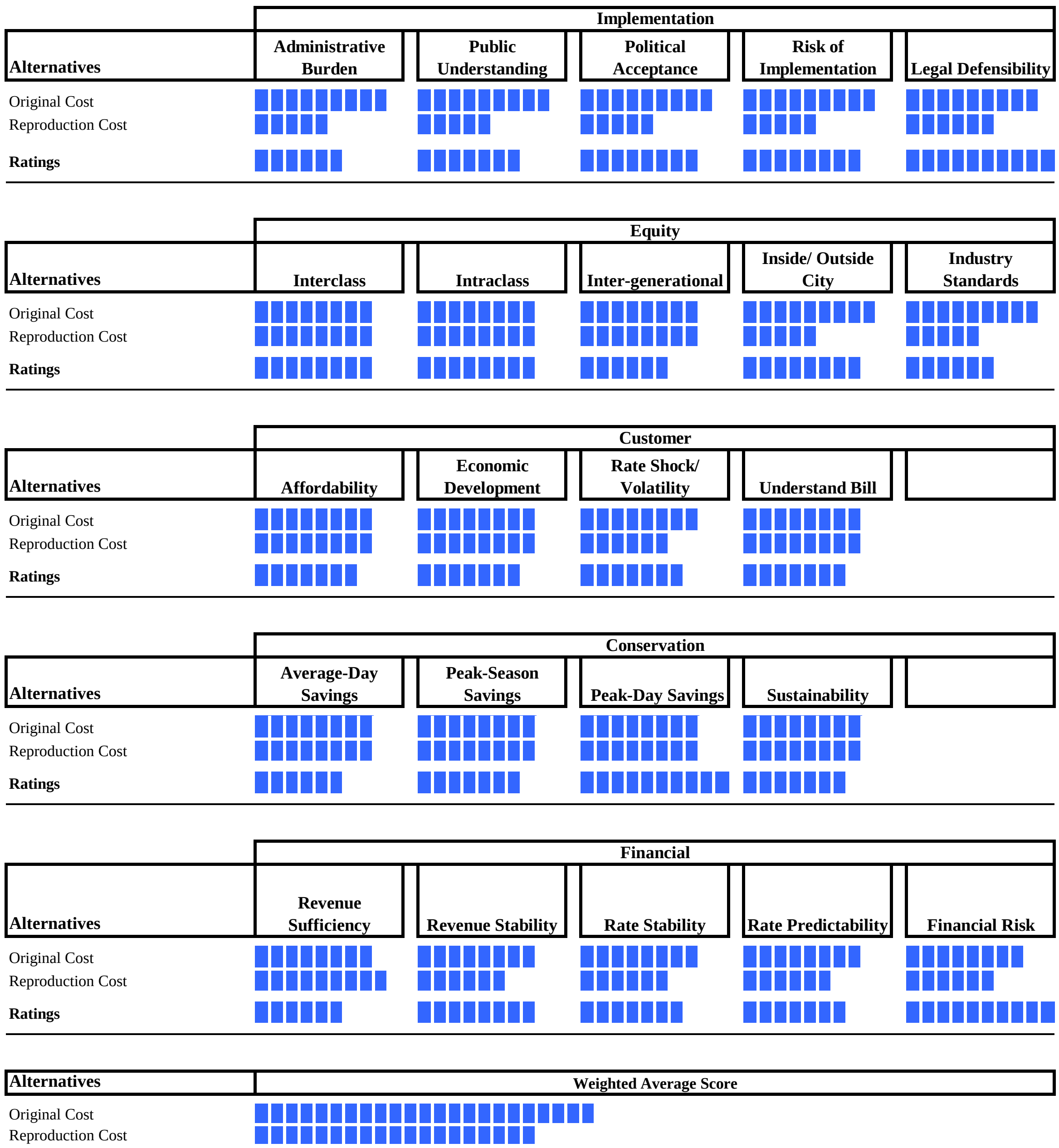
	Conservation				
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**	
Weighted Average Cost of Capital	7.4	7.4	7.4	7.4	
Indexed Return	7.4	7.4	7.4	7.4	
Fixed Return	7.4	7.4	7.4	7.4	
Rate from 0 to 10 (10 most preferred)	5.6	7.0	9.8	7.0	

	Financial				
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**
Weighted Average Cost of Capital	7.4	7.4	7.4	7.4	7.4
Indexed Return	7.4	5.9	5.9	5.9	5.9
Fixed Return	7.4	8.8	8.8	8.8	8.8
Rate from 0 to 10 (10 most preferred)	5.6	8.4	7.0	7.0	9.8

Alternatives	**Weighted Average Score**
Weighted Average Cost of Capital	1,234
Indexed Return	1,202
Fixed Return	1,333

Evaluations Based on Average Ratings

Approach to Value Rate Base



Average Ratings
Approach to Value Rate Base

	Implementation				
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**
Original Cost	9.3	9.3	9.3	9.3	8.5
Reproduction Cost	4.6	4.6	4.6	4.6	6.2
Rate from 0 to 10 (10 most preferred)	5.6	7.0	8.4	8.4	9.8

	Equity				
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**
Original Cost	7.7	7.7	7.7	9.3	9.3
Reproduction Cost	7.7	7.7	7.7	4.6	4.6
Rate from 0 to 10 (10 most preferred)	8.4	8.4	5.6	8.4	5.6

	Customer				
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**	
Original Cost	7.7	7.7	7.7	7.7	
Reproduction Cost	7.7	7.7	6.2	7.7	
Rate from 0 to 10 (10 most preferred)	7.0	7.0	7.0	7.0	

	Conservation				
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**	
Original Cost	7.7	7.7	7.7	7.7	
Reproduction Cost	7.7	7.7	7.7	7.7	
Rate from 0 to 10 (10 most preferred)	5.6	7.0	9.8	7.0	

	Financial				
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**
Original Cost	7.7	7.7	7.7	7.7	7.7
Reproduction Cost	9.3	6.2	6.2	6.2	6.2
Rate from 0 to 10 (10 most preferred)	5.6	8.4	7.0	7.0	9.8

Alternatives	**Weighted Average Score**
Original Cost	1,391
Reproduction Cost	1,116

Evaluations Based on Average Ratings

Treatment of Construction Work In Progress

Average Ratings
Treatment of Construction Work In Progress

	Implementation				
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**
Capitalize Interest	8.3	7.0	7.0	8.3	7.0
Include in Rate Base	4.2	8.3	8.3	5.6	7.0
Rate from 0 to 10 (10 most preferred)	5.6	7.0	8.4	8.4	9.8

	Equity				
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**
Capitalize Interest	7.0	7.0	9.7	9.7	8.3
Include in Rate Base	7.0	7.0	4.2	4.2	5.6
Rate from 0 to 10 (10 most preferred)	8.4	8.4	5.6	8.4	5.6

	Customer				
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**	
Capitalize Interest	7.0	7.0	6.3	7.0	
Include in Rate Base	7.0	7.0	8.3	7.0	
Rate from 0 to 10 (10 most preferred)	7.0	7.0	7.0	7.0	

	Conservation				
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**	
Capitalize Interest	8.3	8.3	8.3	8.3	
Include in Rate Base	8.3	8.3	8.3	8.3	
Rate from 0 to 10 (10 most preferred)	5.6	7.0	9.8	7.0	

	Financial				
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**
Capitalize Interest	7.0	7.0	7.0	7.0	7.0
Include in Rate Base	8.3	8.3	8.3	8.3	8.3
Rate from 0 to 10 (10 most preferred)	5.6	8.4	7.0	7.0	9.8

Alternatives	**Weighted Average Score**
Capitalize Interest	1,284
Include in Rate Base	1,232

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Issue Paper #2
Water Cost Allocations

Subject: Water Cost Allocations and Fire Charges

Date: December 31, 2007

Introduction

A water cost-of-service analysis is a method of allocating costs (known as revenue requirements, which is the topic of Issue Paper #1) to the customer classes that a utility serves. Over the years industry standards have evolved to guide practitioners in the conduct of these analyses. This issue paper looks at methods of allocating costs for water utilities.

The American Water Works Association (AWWA) provides many of the industry standards for water ratemaking. This organization publishes the definitive industry manual on water rates entitled *Principles of Water Rates, Fees, and Charges*.[1] Although the manual covers the principles of water ratemaking in detail, many of the specific methodological options for a specific cost allocation process are left to the practitioner to develop for the particular circumstances. This issue paper explores the options for cost allocations available to the Austin Water Utility (AWU).

Overview of the Cost-of-Service Process

The cost-of-service process can be described in 9 distinct steps. These are:

1. Determine revenue requirements;
2. Determine customer classes;
3. Estimate customer characteristics;
4. Allocate costs to functions;
5. Allocate costs to cost pools;
6. Allocate costs to categories;
7. Allocate costs to customer service characteristics;
8. Allocate costs to customer classes; and
9. Design rates.

This issue paper covers steps 4 through 8. The remaining steps are presented in other issue papers.

Peak-Related Costs and Allocation Methods

Water systems are designed to meet both the average and peak demands of their customers. Therefore, data on total annual consumption and contributions to system peak demands are needed to allocate costs fairly among customer classes. Data on the number

[1] American Water Works Association, *Manual of Water Supply Practices—M1*, *Principles of Water Rates, Fees, and Charges*, Fifth Edition, (Denver, Colorado: American Water Works Association, 2000)

of customers with meters of various sizes must also be available to allocate customer- and meter-related costs.

As natural monopolies, the competitive market fails to efficiently price utility services. The study of these market failures and corresponding approaches to mitigate the failures falls within the utility economics discipline.

Utility economists have developed pricing theories and models to guide the development of utility rates. The core of this pricing theory is called the *peak-load pricing model.* Under the peak-load pricing model, the fixed costs of a utility are recovered from customer classes in proportion to each class's contributions to the utility's required capacity. Under this approach, the utility's capacity-related costs (i.e., the fixed cost of its capacity, both capital and O&M) depend on the size of facility required to meet the utility's peak demands. The types of peaks vary from utility to utility and are often driven by the technical choices and corresponding facilities available to meet customer demands.

For water utilities, the peak demands that drive capacity vary by the nature of the facility being employed and the customers using them. For example, water treatment plants are often sized to meet the peak-day demand of the utility. The finished water storage reservoirs are often sized to meet the system's peak-hour demand. The peak-load pricing model provides a framework for allocating the utility's fixed costs based on the demands by the utility's customers.

AWWA has identified two broad cost allocation methods for allocating a utility's costs and, thereby, determining water rates. Each of these cost allocation methods has its origins in the peak-load pricing models. These methods are[2]:

- Base/Extra-Capacity Method, and
- Commodity/Demand Method.

The primary difference between the cost allocation methods is the approach used to allocate peak-related costs to customer classes. The base/extra-capacity method is a deviation from the strict peak-load pricing model that accounts for the benefits that customers with lower peaking factors experience by the investment in capital-intensive

[2] A third method identified by AWWA is called the functional-cost method. This method allocates costs to four water functions. These functions are (1) production and transmission, (2) distribution, (3) customer costs, and (4) hydrants and connections. This method was developed by the Michigan Section of the American Water Works Association in 1949 and published in the first edition of the *M1 Manual* in 1954. This method is considered archaic and not widely accepted because it fails to recognize the capacity-related costs incurred by water utilities to serve customers. Although this method has been mentioned in the fourth and fifth editions of the *M1 Manual*, it is no longer considered a viable method by AWWA. For that reason, it is not further discussed in this issue paper.

facilities that lower the utility's overall costs for off-peak users.[3] Because the utility must select its production technologies from those that are effective and available but differ in their intensity of use of capital and O&M, the optimal technology may not be the technology chosen if it were merely used to meet peak-period demands. For instance, when planning future capacity with multiple technologies, a water utility will often select a technology based on its total costs (i.e., O&M and capital costs) [4] compared to the total costs of other technologies, given the utility's forecast of water demands.

For example, a water utility may have two options in meeting the demands of its customers. One option may be a conventional filtration facility using surface water with a relatively low per unit variable cost but a relatively high fixed cost. The alternative option may be a smaller treatment facility augmented with supplies from a ground water system. In this case, assume the cost of pumping and the limitations on supplies makes the groundwater system have higher operating costs than the larger filtration facility option. It may be cheaper for those customers with higher peaks for the utility to use the ground water to meet their peak capacity so that the smaller filtration facility would be a non-peaking facility. This would reduce the cost attributed to the peak users under the strict peak-load pricing model. However, this outcome may be less efficient if the marginal cost of the larger filtration facility is lower than that of the groundwater system. In that instance, the alternative with the lowest overall costs may be the option with the larger filtration facility (which is sized larger to meet the peak-day demands.)

This finding is often the case for water utilities. As such, the larger filtration facility (which tends to be more capital intensive with lower marginal unit costs for operations) provides value to both those customers who peak on the facility and those that do not.[5] The base/extra-capacity method deviates from the strict peak-load pricing model to account for this possibility.

Figure 1 presents a hypothetical cross section of a water system asset that is sized to meet multiple demands of the water system. This figure illustrates the cost allocation differences between the base/extra-capacity method and the commodity/demand method.

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[3] As the literature on peak-load pricing has matured, some authors suggest that, under certain conditions, non-peaking customers should pay a portion of the capacity-related costs of peak-related facilities. For example, if the production function for a utility allows for the substitution of O&M expenses for capital (i.e., a neoclassical production function), the peak-load pricing allocation approach may charge a portion of the capacity costs to non-peaking customers. See Elizabeth E. Bailey and Erick B. Lindenberg, "Peak Load Pricing Principles: Past and Present," in *New Dimensions in Public Utility Pricing*, ed. Harry M. Trebing (East Lansing, Michigan: Institute of Public Utilities, Graduate School of Business Administration, Michigan State University, 1976, 10. See also John C. Panzar, "A Neoclassical Approach to Peak Load Pricing", *The Bell Journal of Economics*, 7(2) (Autumn 1976): 521-30.

[4] These *total costs* are often called present worth estimates, which take into account the time-value of money.

[5] Almost all customers have a peak demand that exceeds their average demand. However, the relative portions of the peak-related costs attributable to customer classes vary. For example, some large customers may have a peak-day demand that is 125 percent of their average-day demand, while other customers my have a peak-day demand that is more than 250 percent of their average-day demand.

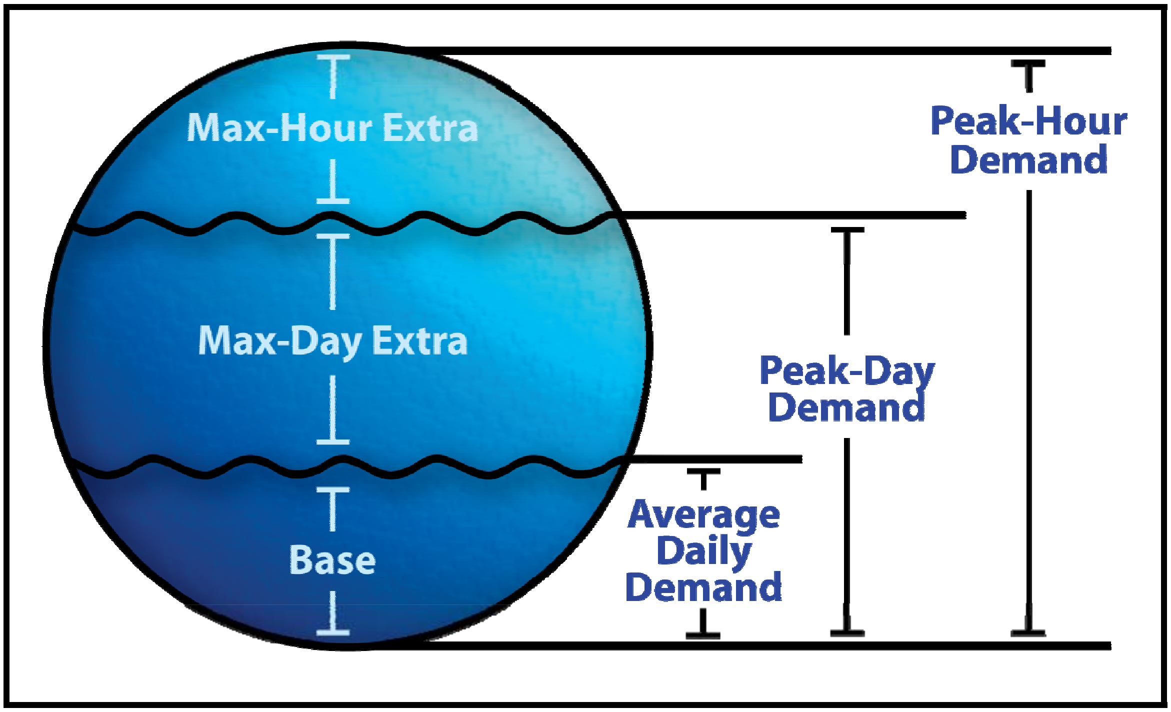

Figure 1: Hypothetical Water System Asset

Commodity/Demand Method

The commodity/demand method more closely follows the strict peak-load pricing model. With the commodity/demand method, costs are commonly distributed to the following customer service characteristics:

- Commodity
- Demand
- Customer
- Meters and services
- Fire

Commodity costs are those costs incurred exclusively in providing water on an average-day basis or for expenses that tend to vary with the total amount of water produced, regardless of demands. These costs have the same unit costs for each level of output regardless of the rate of use of the water. Commodity costs may include facilities sized exclusively to meet average-day demand, or operating costs like chemicals, power, etc., where the cost per unit does not vary based on the rate of usage.[6] Commodity costs are

[6] The classic example is chemicals. Generally the cost of chemicals is related to the total amount of chemicals used in the production of the water. The amount of chemicals used is typically the same for each gallon of water treated. Historically power costs have been identified as commodity costs for water

allocated equally to all water produced (in other words, equally to all water on an average-day basis.)

Demand costs are those costs associated with meeting the peak demands of the utility's customers. The demand costs are generally divided into peak-day and peak-hour demands. In some circumstances other time-steps (such as peak-season) may be appropriate. The peak-day demand costs are those costs associated with facilities sized to meet the peak-day demand of the utility's customers. Water treatment plants are commonly allocated as peak-day facilities. Peak-hour demand costs are the costs associated with facilities sized to meet the peak-hour demand of the utility's customers. Distribution-related costs are often identified as peak-hour demand costs.

Typical customer costs are those costs expended in serving customers, regardless of water demand. Examples include billing, customer service, and meter reading.

Meter and services costs are those costs that vary with the size of the meter and service used to serve a customer. Examples of meter and services costs are the costs of meter testing, maintenance, and replacement.

Fire costs are discussed separately in a subsequent section of this issue paper.

Considering the hypothetical asset depicted in Figure 1, assuming it functions to meet the peak-hour demand of the system, the entire costs under the commodity/demand method for this asset would be allocated to customers based on the peak-hour demand they place on the system.

Had the hypothetical asset depicted in Figure 1 been sized to meet the peak-day demand, the costs would be allocated to customers based on their percentage of the peak-day demand on the system. Only those facilities specifically sized to meet average-day demand would be allocated to customers based on their average-day demand.

Base/Extra-Capacity Method

The base/extra-capacity method differs from the commodity/demand method in how it prorates the costs of facilities meeting multiple demand requirements. The base/extra-capacity method allocates costs to the following customer service characteristics:

- Base,
- Extra-Capacity,
- Customer,
- Meter and Services, and

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utilities. However, many power tariffs for water utilities include demand charges where the utility pays higher costs to cover the capacity it requires in the electric utility's system. These demand charges have become more common and significant.

- Fire.

Base costs are costs that tend to vary with the amount of water produced and a portion of the cost of capacity that meets average-day demand. Base costs are the costs that would be incurred if water consumption occurred evenly from day to day and hour to hour and the system did not need to invest in additional capacity to meet peak requirements.

Extra-capacity costs represent costs incurred to meet water demands that exceed average levels of water usage by customers. These costs are incurred due to the water usage variations and peak demands imposed on a water system. Extra-capacity costs are typically divided into costs incurred to meet the additional capacity requirements of maximum-day and maximum-hour water demands.

Customer and meters and services costs are treated in the same manner under the base/extra-capacity method and the commodity/demand method. Fire costs are discussed separately in a subsequent section of this issue paper.

For the hypothetical asset depicted in Figure 1, the cost of the asset is prorated to three customer service characteristics (i.e., base, max-day extra capacity, and max-hour extra capacity) based on system-wide demands of the utility. Using the example in Figure 1, the asset is allocated to each of the three customer service characteristics based on the relative demands. A hypothetical calculation illustrates the allocation differences. For the hypothetical calculation, assume:

- The average-day demand of the system is 140 million gallons per day (MGD);
- The peak-day demand of the system is 215 MGD; and
- The peak-hour demand of the system is 335 MGD.

In this case, the base costs would be allocated 42 percent of the cost. The 42 percent is calculated as:

$$\left(\frac{140\,MGD}{335\,MGD}\right)=42\%$$

The max-day extra-capacity costs would be allocated 22 percent of the costs. The max-day extra capacity is the difference between the peak-day demand and the average-day demand (see Figure 1.) In our hypothetical example, the calculation would be based on:

$$\left(\frac{(215\,MGD-140\,MGD)}{335\,MGD}\right)=22\%$$

Finally, the max-hour extra-capacity is the difference between the peak-hour demand and the peak-day demand (see Figure 1.) The percentage of costs allocated to a facility sized to meet peak-hour needs would be 36 percent based on:

$$\left(\frac{(335\,MGD - 215\,MGD)}{335\,MGD}\right) = 36\%$$

Findings on Overall Methods

In summary, for our hypothetical asset that serves the peak-hour needs of the utility's customers, the commodity demand would allocate 100 percent of the costs based on each customer classes' participation in the utility's peak-hour demand. The base/extra-capacity method would allocate 42 percent based on each class's average-day demand, 22 percent based on their portion of peak-day demand that exceeds the average-day demand, and 36 percent based on their portion of peak-hour demand that exceeds the peak-day demand.

Allocation Steps

Once the overall cost allocation method (i.e., commodity/demand or base/extra-capacity) is selected, individual approaches for allocating costs must be developed. This section discusses the approaches available to allocate the components of revenue requirements to customer classes.

O&M Cost Allocations

Equitably allocating the water system's user charge revenue requirements to the customer classes involves a multi-step process. Beginning with O&M costs, the following steps are required. Allocations of capital-related costs are described in a subsequent subsection of this issue paper.

- Step 1: Functionalizes the costs to appropriate water system functions.

- Step 2: Allocate the functionalized costs to cost pools. This step identifies O&M costs that are joint (i.e., those costs that benefit all customer classes) or specific to one or more customer classes.

- Step 3: Distribute functionalized costs for each cost pool to cost categories.

- Step 4: Allocate the costs by cost pool and cost category to the appropriate customer service characteristics.

- Step 5: Distribute the O&M costs by customer service characteristic to customer classes for each cost pool based on each class's proportion of the customer service characteristics.

These steps are described in more detail in the following subsections.

Step 1: Functionalize Costs

A water utility's O&M expenditures may be allocated to water system functions (e.g., source of supply, transmission and distribution, pumping, customer services, general administration, etc.) Functionalizing costs in this manner allows the allocation of specific functions to one or more cost pools. This step enhances the accuracy and equity of the water system cost allocation to the customer classes. The water system functions selected depend on the physical nature of the water system and the manner in which the utility accounts for its costs. Tentatively, the water system functions may include:

- Source and Treatment – Average Day,
- Source and Treatment – Peak Day,
- Finished Water Storage,
- Transmission,
- Pumping—Average Day,
- Pumping—Peak Day,
- Distribution,
- Metering and services,
- Customer,
- Fire, and
- Indirect Costs (e.g., administrative and general).

Step 2: Assignment of O&M Costs to Cost Pools

This step assigns the O&M costs by function to cost pools. A cost pool is a collection of costs that are shared by a group of one or more customer classes. For example, the joint cost pool is shared by all customer classes. Tentatively, the costs pools may include:

- Joint,
- LCRA Costs,
- 1998 Bond Proposition 2,
- Wholesale and Industrial Program Costs, and
- Retail Only Costs.

Each of these is described below.

Joint Costs

Joint costs are those costs that are shared by all customers of the water system in proportion to their respective use of the system.

LCRA Costs

Wholesale customers that purchase raw water directly from LCRA will not participate in the LCRA costs charged to AWU. Currently no wholesale customers qualify for this exclusion. However, this cost pool is considered to facilitate future cost allocations if wholesale customers provide their own raw water.

1998 Bond Proposition 2

The 1998 Bond Proposition 2 cost pool would include those customer classes that pay the debt service associated with the Proposition 2 bonds. The City conducted a special election to provide funding for the purchase of land in the Edwards Aquifer Recharge Zone to protect drinking water quality. The debt service associated with the Proposition 2 Bonds is allocated to inside-city customers only.

Wholesale and Industrial Program Costs

AWU incurs costs to manage its wholesale and industrial program. These costs would be recovered from these customer classes.

Retail Only

Retail only costs are the costs incurred to provide retail services to AWU's customers. These costs will likely include certain distribution system costs that are not incurred to provide service to wholesale customers.

Step 3: Allocation of Pooled Costs to Categories

After costs are allocated to system functions and cost pools, the costs grouped in this manner are then allocated to categories. Cost categories are used to facilitate the allocation of costs by pools to customer service characteristics in Step 4. The previously allocated joint and specific costs are listed by system functions. Each system function can be associated with a cost category. For example, the function of metering can be associated with the services and metering category.

Step 4: Allocation of Costs to Customer Service Characteristics

The assignment of costs to customer service characteristics varies with the allocation methodology used. Regardless of cost allocation method used (i.e., commodity/demand or base/extra-capacity), the cost-of-service analysis requires an assumption on the appropriate demand characteristics to use.

Considering the operations and design of AWU's system, the customer service characteristics proposed tentatively include:

- Commodity/Demand –
    - Commodity,
    - Peak-day Demand,
    - Peak hour Demand,
    - Customer,
    - Meters and Services, and
    - Fire;

- Base/Extra-Capacity –
    - Base,
    - Max-day Extra-Capacity,
    - Max-hour Extra-Capacity,
    - Customer,
    - Meters and Services, and
    - Fire.

Step 5: Distribution of Costs to Customer Classes

The next step involves the projections of customer class water demands and their respective consumption characteristics. Typically, there are several customer classes that each use a different portion of total annual water consumption. In addition, each customer class's level of water consumption is different. Estimates of peak demands that describe each customer class's variation in water demand are required to allocate system costs equitably. Generally, a review of water utility consumption and production records and other empirical evidence is used to estimate each customer class's peak rates of water use.

Utilities typically collect water consumption records for customer classes only on a monthly basis, and seldom on a daily or hourly basis. Peaking factors, together with projected water consumption, can then be used to establish the costs of service by customer class.

One method of determining customer class peaking characteristics is to impute the peak-day and peak-hour demands from monthly reads. This method uses the deviations of monthly demands by class as a method of allocating the system-wide peak-day and peak-hour demands to each class. Essentially each class is allocated a portion of the peak-related demands based on their portion of the monthly demands. Although this method is necessarily subject to dispute, it is a common method used to develop peak-day and peak-hour estimates by customer class.

Capital Cost Allocations

Allocating capital costs using either the cash basis or the utility basis involves steps in addition to those outlined above. Capital costs (whether under the cash or utility basis) are generally allocated to customer classes by allocating the assets that serve each customer class. The value of these assets is called the *rate base* and is normally based on the net book value of the facilities.

Determining each customer class's portion of the system rate base is accomplished by allocating the water system's fixed assets net of accumulated depreciation. Net fixed assets are allocated to functions, cost pools, categories, and customer service characteristics as in Steps 1 through 5 above. The following additional steps result in an allocation of capital assets to customer classes.

- Step 6: Determine the rate base for each customer class.
- Step 7: Determine the rate of return.
- Step 8: Allocate the return on rate base among the customer classes.

Step 6: Determine Rate Base by Customer Class

The first part of determining the rate base for each customer class is to summarize the net fixed assets allocated by cost pool and category to customer service characteristics and customer class. The net fixed assets allocated to each customer class is the value of the plant in service that is used and useful for that customer class less the accumulated depreciation for those assets. The second part of determining rate base by customer class is to calculate an allowance for working capital, or a percentage of the O&M costs allocated to each customer class. The allowance for working capital recognizes the carrying costs of working capital that the utility incurs for operation.

Adding the net plant in service and allowance for working capital results in the rate base attributable to each customer class.

Step 7: Determine Rate of Return

The rate of return used in the analysis depends on the method used to determine total revenue requirements. Under the utility basis, a fair rate of return is assumed to be a return that could be earned by investing the owners' money in a comparable investment, an investment which has similar risks. The rate of return is often referred to as the cost of capital. It is generally calculated using a weighted average of the utility's cost of debt and the return on the utility's equity.

Under the utility basis with cash residual method the rate of return is different for owner and non-owner customers. When using this method of determining revenue requirements, the rate of return for owner customers is calculated after the cost allocated to the non-owner customers is determined. The rate of return for owner customers would equal the return required so that the expected revenue from owner and non-owner customers equals the cash-basis revenue requirements.

Under the cash basis, the rate of return is determined to be the return required to generate the cash-basis needs of the utility. Even though depreciation is not an element of the cash-basis revenue requirements, often a portion of the cash-basis revenue requirements is allocated in the same manner as depreciation. In those cases, the depreciation and O&M costs are subtracted from the total revenue requirements before calculating the required rate of return. The difference, when divided by the total rate base, equals the rate of return used.

Step 8: Allocation of Return on Rate Base to Customer Classes

The final step in allocating capital costs is to allocate the return on rate base to each of the customer classes. The return on rate base for each customer class is calculated by multiplying the rate base allocated to each customer class in Step 6 by the respective rate of return from Step 7. The result of Step 8 is the return on rate base attributable to each customer class.

Allocating Depreciation Expenses

Allocating annual depreciation expenses follows the same steps as for O&M costs. Depreciation is allocated on the same basis as the associated asset. Although depreciation is not an element of revenue requirements under the cash basis, a portion of the capital cost under the cash basis is often allocated in the same manner as depreciation.

Cost of Service by Customer Class

After the revenue requirements are fully allocated by function, pool, and categories to the customer characteristics for each class, the O&M and capital costs are summed for each class to determine the total cost of service by customer class.

Allocation of Fire-Related Costs

Water utilities normally provide fire protection services that require them to supply enormous amounts of water whenever, and wherever, a fire occurs. The cost of providing the capacity for fire protection can be a substantial part of a water utility’s total cost and an ongoing issue for those responsible for setting service charges for private fire lines. Unfortunately, the approach for setting charges for private fire services varies among jurisdictions leaving many utility professionals confused about cost allocation and recovery issues.

Distinctions in Fire-Related Costs

An important first step in understanding the treatment of fire-related costs in setting rates is to understand the types of costs a utility incurs in providing water for fire suppression.

As a first cut, fire-related costs can be separated into direct and indirect costs. Subsequently, these direct and indirect costs can be further distinguished as either public or private costs. Each of these categories of costs is described below.

Direct vs. Indirect Costs

Direct costs include the cost of installing and maintaining fire hydrants and other facilities used *directly* to meet the fire protection needs of the utility's customers. Indirect costs consist of the costs of over-sizing the system (e.g., storage, distribution mains, etc.) to meet peak fire-flow demands.

Of these two types of costs, indirect costs are the most difficult to quantify. For water storage facilities, the fire storage component can be calculated for each storage facility using the design standards for the service area. These standards will often depend on the type of development that is served by the storage facility and are described as rates of flow (e.g., gallons per minute) and duration (e.g., number of hours of sustained flow). For other facilities, fire demands can be determined with the same techniques used in setting water rates. This determination can require extensive technical analysis of water demands to determine the portion of facilities allocated to fire.[7] The largest impact will be on the utility's peak-hour demand.

Public vs. Private Fire Costs

Public fire service consists of providing water for fire suppression at public fire hydrants. Private fire service entails providing individual customers with additional fire protection by means of private fire lines, hydrants, and sprinkler systems. By providing additional localized fire protection to large private customers, fires at these locations may be controlled more quickly requiring less capacity in the public fire system. This may reduce the utility's overall need for stand-by capacity, thereby reducing the total fire-related cost.

Figure 2 illustrates the distinction between direct and indirect costs for both public and private fire service.

[7] The AWWA manual on water rates contains a chart that relates the percentage of a utility's revenue requirement assumed to be incurred for fire protection and the number of customers. See American Water Works Association, *Manual of Water Supply Practices—M1, Principles of Water Rates, Fees, and Charges*, Fifth Edition, (Denver, Colorado: American Water Works Association, 2000), page 219.

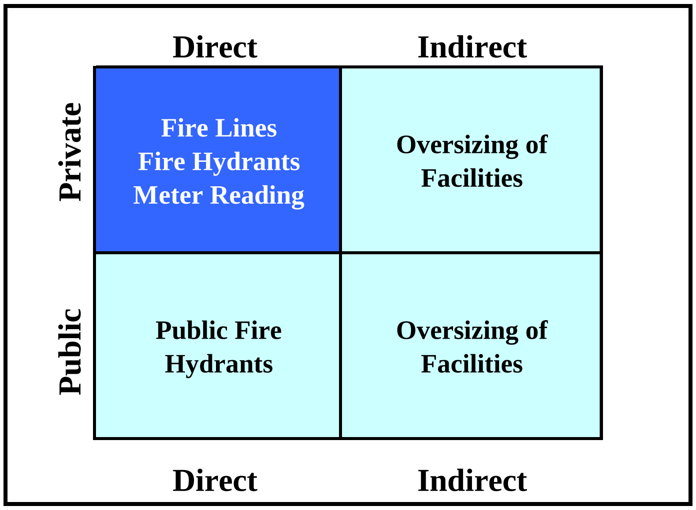

Figure 2: Fire Cost Matrix

The shading indicates how the various costs are typically grouped for the purpose of cost recovery. Indirect public and private costs as well as direct public fire costs are often grouped together. Depending on the utility and percentage of total costs attributable to fire protection, these costs are sometimes ignored during the utility's rate-setting process. By ignoring these costs, the utility treats them as an overhead cost, which is allocated to all customers. Some utilities allocate these fire-related costs in other ways.

Determination of Fire-Related Costs

The most common approach used to determine the portion of a utility's costs attributable to fire protection is the proportional cost method described in the AWWA *M1 Manual.*[8] Using this method, the cost of indirect fire protection is determined on the basis of the potential water demand for firefighting purposes in proportion to the total potential water demand of the system. This approach is commonly used because it allocates costs to fire protection consistent with either the commodity/demand or the base/extra-capacity methods frequently used in cost-of-service studies.

Costs associated with the provision of direct fire service, such as hydrants or preventive maintenance costs, are also included. Because a utility can generally identify its private fire customers, many utilities make the purchase and maintenance of private hydrants, meters, standpipes, and sprinkler systems the responsibility of these customers. The direct private fire costs borne by the utility typically include only meter checks, facility inspections, and billing and administrative costs. Using the number of equivalent fire connections for private and public connections, the utility can allocate total fire service costs to the two types of customers. The portion of the public fire costs related to

[8] American Water Works Association, *Manual of Water Supply Practices—M1, Principles of Water Rates, Fees, and Charges*, Fifth Edition, (Denver, Colorado: American Water Works Association, 2000), page 218.

providing service to private customers can be determined by using the relative demands of various size hydrants or sprinkler connections.

Recovering Fire Service Costs

Private Fire Service Charges

Once the fire-related costs are identified, the next step for a utility is to select an appropriate cost recovery method. Available options typically include:

- Value of protected property,
- Size of service connection,
- Number of equivalent dwelling units,
- Per account, and
- Number of sprinkler heads.

Basing private fire charges on the size of the connection is regarded as the best method of estimating each customer’s maximum demand in case of a fire. To calculate the charges by connection size, the total allocated costs are divided by the total number of equivalent fire service connections. This equivalent unit rate is then multiplied by the respective demand factors for each connection size to arrive at the fire service charge schedule applicable to private fire service customers. However, given that the costs incurred by the utility do not typically depend on the size of the connection, calculating private fire charges on a per account basis may also be appropriate. Allocating private fire costs based on the number of sprinkler heads is fairly uncommon because of high administrative burden and the fact that the localized operation of modern sprinkler systems makes the total number of sprinklers in a building an inaccurate proxy for actual fire demands.

It is important to decide early whether a separate charge for indirect fire costs will be included in the private fire service charge. This question is of particular importance if the customer that pays the private fire charge also pays public fire charges (which include an allowance for the indirect fire costs). In many cases, the addition of a private fire service *reduces* the utility’s total indirect fire costs. Charging customers that have private fire services for both the public and private indirect costs could result in a double charge. Also, it may discourage the installation of private fire services which, if not installed, would increase the demand on the public system as firefighting becomes relatively less effective.

Public Fire Service Charges

Many methods of recovering costs of public fire service exist. Because residential customers often have a more uniform level of fire protection requirements than non-residential customers, utilities frequently use different rate designs for the two types of customers. While the method of determining the costs associated with fire protection are fairly standard, the utility usually decides on the cost recovery methodology.

Residential Customers

When designing fire service charges for residential customers, the utility typically assumes that the required fire flows are equal for all customers. Thus, one of the most common approaches used to assess public water system fire charges is on a per dwelling unit basis.

Although rare, residential customers who own private fire facilities may be assessed, in addition to the public water system fire charge, a private fire charge, which recovers the utility's direct fire costs for the private facility.

Non-Residential Customers

Because the fire flow requirements for non-residential customers can vary significantly, most utilities assess public fire protection costs to these customers based on a method recognizing the potential difference in fire-flow demand. Commonly used proxies for the differences in fire-flow demand include the number of square feet of the protected building, water usage, meter size, etc. The rationale for using building size as a measure of fire demands is the belief that larger buildings require greater fire flows. This approach lacks differentiation in water system fire charges based on building materials, design, and use. The approach assumes that it generally requires more water over longer periods to fight a fire in a larger structure than in a relatively smaller one.

The approach based on water usage assumes the customer's potential fire demands are related to the amount of water they purchase. This approach is often used where the availability of other data are limited and is one of the least accurate proxies for fire-flow demands. Another approach used with limited data is to base estimates of fire costs on the size of a customer's water meter. This approach assumes that larger customers, with greater fire-flow demands, have larger meters.

Another method discussed in the AWWA *M1 Manual*[9] is to base fire charges on the value of the building and improvements (i.e., the value of the property excluding land). This method presents several challenges to water utilities. First, basing a fee on property value may violate local and/or state tax limitations. Secondly, water utilities may find it difficult to maintain an adequate database of the value of improvements to real property.

While none of the approaches presented here accurately reflects the specific fire-flow demands for each property, basing non-residential fire protection charges on the number

[9] American Water Works Association, *Manual of Water Supply Practices—M1, Principles of Water Rates, Fees, and Charges*, Fifth Edition, (Denver, Colorado: American Water Works Association, 2000), page 227.

of square feet of a building is one of the closest proxies available, but it may impose significant data requirements on the part of the utility.

Methodological Options Under Review

When considering the issue of cost allocations, the following methodological options are important to consider:

1. Which is the most appropriate overall method for allocating costs (i.e., commodity/demand or base/extra-capacity?)

2. What are the appropriate time steps (e.g., peak-season, peak-day, and/or peak-hour) for the cost allocation method?

3. Should AWU charge private fire connections for both the direct and indirect fire costs?

4. How should AWU recover its public fire cost in its cost-of-service methodology?

Each of these issues is explored further in the following sections. The discussion for each issue includes:

- Overview of the issue,
- Description of the alternatives,
- Evaluation of the alternatives using the executive team's evaluation criteria, and
- Consultant's preliminary findings and recommendations.

After presentation to the executive team and public involvement committee, the consulting team will finalize its recommendations.

Issue 1: Which is the most appropriate overall method for allocating costs?

Overview of the Issue

The first cost-allocation policy to resolve is which overall cost allocation method is best for AWU and its customers. The alternative selected will determine the method of allocating costs to each of the customer classes.

Description of Alternatives

The two available alternative methods are:

1. Commodity/demand, and
2. Base/extra-capacity (current approach).

These methods are fully described in an earlier section of this issue paper.

The primary difference between the alternatives is the treatment of peak-related costs. The commodity/demand method more strictly follows the peak-load pricing model. The base/extra-capacity method includes an allowance for the beneficial use of peak-related facilities by customers during the off-peak period.

Evaluation of Alternatives

Attachment A presents the weighted evaluations of the alternatives.[10]

The differences between the two overall approaches are very narrow. In general, the base/extra-capacity method faired somewhat better because it is AWU's current practice and is not creating any apparent problems. Under implementation, the base/extra-capacity would generally be easier to implement since it is AWU's current practice. This also suggests it would be more acceptable to the public and political leaders. Because the base/extra-capacity method already includes an allowance for allocation of an appropriate level of costs to off-peak users, the policy would likely be more durable if AWU increases the complexity of its water system.

We expect the base/extra-capacity method to be more equitable from an interclass equity perspective since it shares the costs of peak-related facilities with off-peak customers. Other measures of equity are unaffected by the overall method of cost allocations.

The base/extra-capacity method may be more affordable to residential customers if we assume these customers have higher peaking factors. Alternatively, the base/extra-capacity method may increase the allocation of costs to businesses with lower peaking factors, which may have an offsetting impact to economic development. No other customer impacts differ among the alternatives.

Because the commodity/demand method may increase the cost of water for customers with higher peaking factors, it may elicit greater conservation during the peak season and on the peak day. No other conservation criteria are impacted differently by the cost allocation methods.

The financial criteria do not vary based on the alternative.

Preliminary Findings and Recommendations

The consulting team recommends AWU use the base/extra-capacity method for allocating costs. This method is consistent with current practices and future uncertainties.

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[10] The weights for the criteria used in these evaluations do not include the actual weights for all members of the executive team. The full executive team's weights will be incorporated into the analysis after the weights of all members have been determined.

Issue 2: What are the appropriate time steps for the cost allocation method?

Overview of the Issue

Regardless of cost allocation approach selected, the cost-of-service analyses will require the selection of time steps for the cost allocations. The time steps are used to determine which peak demands are included in the cost allocations.

Description of Alternatives

Many alternative time steps exist in theory. But only two alternatives are relevant to AWU. These are:

1. Peak-day and peak-hour demands (current approach), and
2. Peak-season, peak-day, and peak-hour demands.

The selection of appropriate time steps for a cost-of-service analysis depends on the design and operation of the water system.

Evaluation of Alternatives

The two alternatives are very similar in their evaluations. From an implementation perspective, the administrative burden may be higher in implementing a new time step to the current peak-day and peak-hour demands. However, the difference in administrative burden is likely to be trivial.

The real distinction in the alternatives is the impact on equity. Currently AWU does not have facilities that are sized or operated to meet the utility's peak-season demands. Introducing the peak-season time step diminishes the interclass and inside/outside city equity. This is the only significant differentiator between the options.

The customer, conservation, and financial criteria do not vary based on the alternative.

Preliminary Findings and Recommendations

The consulting team recommends AWU use peak-day and peak-hour time steps for the cost-of-service analysis. These time-steps are consistent with AWU operations and facilities. Introducing an additional time step may diminish the accuracy of the cost allocations.

Issue 3: Should AWU charge private fire connections for both the direct and indirect fire costs?

Overview of the Issue

AWU may be incurring significant costs to provide fire protection to its customers. These costs are incurred both as direct and indirect fire costs. Water utilities throughout the industry have differing approaches to charging for private fire connections. Some utilities determine the charges for private fire connections to recover only the direct costs (e.g., billing, cross-connection controls, meter reading, billing, etc.) of the service. Other utilities include some of the indirect fire costs (e.g., the cost of over-sizing facilities, etc.) in the charge.

Description of Alternatives

AWU does not charge separately for private fire connections. Two approaches to private fire lines are generally available in the industry. These are:

1. Charge private fire connections for the direct costs of providing the service (current approach); and
2. Charge private fire connections both the direct and indirect costs of providing the service.

The primary difference in the approaches is philosophical. Under the first alternative, private fire connections do not place an additional burden on the indirect fire costs of the system merely because they have a private fire connection. In fact, everything else being equal, private fire connections generally reduce the fire flow requirements of a facility and reduce the burden on the indirect fire costs of the utility.

Alternatively, private fire connections provide a service to private properties that benefit directly through lower insurance premiums and/or the ability to meet certain fire codes in a cost-effective manner. Additionally, many of those properties with private fire connections have those connections because of the disproportionate burden they place on the firefighting capabilities of the City. Including both the direct and indirect fire costs in the private fire connection charges for these customers may enhance the overall fairness of the charges.

Evaluation of Alternatives

Including only the direct fire costs in the private fire connection charge minimizes the administrative burden of determining the parameters necessary to calculate an appropriate share of the indirect fire costs. Also, the public and political acceptance of charging only the direct fire costs to private fire connections may be greater since all customers benefit from the indirect fire costs through either public hydrants or private connections. In other words, there is no specific benefit that accrues to private fire connections that is not also available to others. This lack of specific benefit and additional costs may reduce the public and political acceptance of charging indirect fire costs to private connections.

The *Direct Costs Only* alternative is more equitable than the alternative that includes indirect fire charges. This evaluation assumes that customers with private fire connections would be entitled to use the public fire suppression system in the event of a fire emergency. Also, this evaluation assumes that the current system of charges does not subsidize private fire connection customers. In other words, the evaluation assumes that the current allocation of fire costs (both direct and indirect) is fair and equitable.

Depending on the number of private fire connections and their size, the inclusion of both direct and indirect fire charges in the private fire connection charge may reduce the remaining costs allocated to residential customers. This may enhance affordability for residential customers. As a consequence, however, this burden will likely fall on large commercial, industrial, and institutional customers. This additional burden may have negative impacts on economic development.

The conservation criteria do not vary based on the alternative.

Other than a slight improvement in revenue stability, the financial criteria do not vary based on the alternative. The improvement in revenue stability would result from having a larger portion of AWU's costs covered by a fixed fire charge that does not vary with weather, economic cycles, etc.

Preliminary Findings and Recommendations

The consulting team tentatively recommends AWU include only direct costs in its fire charges to those customers with private fire connections. Without additional information, it appears that charging these customers for both private and public fire protection may result in an inequitable allocation of costs.

Issue 4: How should AWU recover its public fire cost in its cost-of-service methodology?

Overview of the Issue

AWU has made significant investments in its infrastructure to provide fire protection services to its customers. These investments include over-sizing transmission and distribution mains, pumping facilities, and finished water reservoirs. A specific charge to customers for fire protection could more equitably recover these costs.

Additionally, as AWU pursues rate designs that provide greater water conservation, its revenue may become less stable. Designing a charge structure that provides more fixed revenue from fire protection charges may allow AWU to be more aggressive with its conservation efforts while maintaining the necessary financial health of the utility.

Description of Alternatives

Red Oak identified four options that AWU can use to recover some or all of its fire-related costs. These options include:

1. Recover indirectly through the cost of water services (current approach);
2. Assess a fixed charge based on the value of the real property improvements;
3. Assess a fixed charge that varies by fire customer class; and
4. Assess a fixed charge based on the size of the water meter.

The first alternative is the most commonly used method of recovering fire charges. Under this alternative, fire-related costs are treated like overhead costs and embedded in the overall costs of water.

The second alternative establishes a charge based on the value of the real property improvements (excluding land.) The rationale for a charge based on real property improvements is that properties which are more valuable require greater fire protection. This alternative is very similar to an *ad valorem* property tax and may be considered a tax rather than a fee in some jurisdictions. Such a determination may affect the legality of the fee for AWU.

The third and fourth alternatives are designed to avoid the tax versus fee controversy. Under these alternatives, AWU's fire-related costs are recovered in a fixed monthly charge. Under alternative 3, the fixed monthly charge is based on a classification of each customer's fire flow requirements. The fourth alternative recovers the fire-related costs as a portion of AWU's fixed charge based on the size of the customer's water meter.

Evaluation of Alternatives

The implementation criteria vary significantly by alternative. The simplest alternative to implement is including the fire cost as an indirect cost for water services. Recovering the fire costs by meter size is slightly more difficult. The meter size data is readily available and currently integrated into AWU's billing system. Developing data on the value of the improvements is substantially more burdensome. Although this data likely exists in tax assessor records, developing the data and integrating it into the water billing system may be extremely costly and infeasible at this time. Developing a separate database of fire demands by property would require a significant amount of time and resources. It is doubtful that the current water billing system could maintain this data—although that fact has not been verified.

Public understanding would be similar for each of the alternatives. The charge by fire class may be less understandable to the public since it would require the development of a new billing determinant not previously used by AWU.

Political and public acceptance is difficult for Red Oak to gauge. Based on prior experience, Red Oak assumes the value of improvements would be less acceptable to both elected officials and the general public. This approach may appear indistinguishable from an *ad valorem* property tax and, therefore, be less accepted. The other alternatives do not differ significantly.

Including the fire costs as an indirect cost presents very little risk of failure to implement. Also, because the meter sizes are already included as a billing determinant, the fixed charge by meter size has fairly low risk. However, the other two alternatives present significant risk of implementation. The data requirements and the capabilities of the water billing system may prove impossible to overcome. Accordingly, these alternatives received relatively low marks on risk of implementation.

The ratings for the alternatives on legal defensibility and policy durability are the same. Red Oak recommends that AWU consult its legal counsel for a determination of the legal defensibility of each of the alternatives. However, Red Oak is specifically concerned about the ability of the alternative based on the value of real property improvements to be defended as a fee rather than a tax. This determination is outside our expertise.

For the equity criteria, the alternatives differ in their ratings for interclass, intraclass, and industry standards. For interclass and intraclass equity, the alternatives that are based on value and fire classes score better. This evaluation is based on the ability of these alternatives to fairly recover fire-related costs based on the costs imposed by the customer. The most conventional alternatives are the indirect costs and the fixed charge by meter size. As a result, these options scored higher on the alignment with industry standards. The value of improvements option scored lowest on industry standards since most water utilities charge based on the cost of a service rather than the value of a service. Although the value of the improvements to real property may be a proxy for the fire flow requirements, in most cases it is a proxy for the value of the service received by a customer.

The affordability criterion may best be met by the value of improvements alternative. The value of a property is similar to the approach used to assess property taxes with the intent to incorporate an ability to pay element into the assessment. That is, owners of properties with higher values are thought to have a greater ability to pay property taxes. The fixed charges by fire class may similarly allocate more fire-related costs to those customers imposing significant fire flow requirements on the system. These customers may have a greater ability to pay.

The impacts on economic development are difficult to estimate. It is possible that recovering fire costs as an indirect cost would allocate relatively more costs to residential customers. This may reduce the costs to commercial interests, thereby providing greater economic development. This outcome is highly speculative and therefore the relative ratings are fairly close.[11]

The understandability of the bill was much lower for the value of improvements alternative. That rating is based on the assumption that real property values are unusual items for water bills and may prompt questions and confusion for AWU's customers. Less difficult to understand is the charge base on fire class and meter size. The simplest alternative for understandability of the bill is treating fire costs as an indirect cost. Under this alternative the fire costs are not shown on the bill at all.

Peak-season and peak-day conservation may be enhanced by the alternatives that increase the fixed revenue to the utility. Under these alternatives, AWU will have the ability to pursue relatively more aggressive block rate designs that reward customers for conserving water while maintaining the financial stability and health of the utility. The other conservation criteria are likely unaffected by the alternatives.

Revenue sufficiency is likely improved by using the value of improvements alternative. This additional source of revenue may reduce the pressure on rates, thereby providing more sufficient revenue for the utility. For revenue stability and financial risks, the indirect cost alternative was rated lowest. This low rating results from the reliance of volume-based rates to generate revenue for fire charges. The other alternatives all provide a fixed monthly charge which would not be impacted by weather or economic cycles.

Preliminary Findings and Recommendations

The consulting team tentatively recommends AWU recover some or all of its fire-related costs in a fixed monthly charge based on meter size. While meter size may not be the best proxy for fire flow demands, the two alternatives that improve upon meter size have significant implementation issues. The consulting team further recommends that AWU consult competent legal counsel if it considers implementing a fire charge based on the value of real property improvements.

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[11] Determining the impact on economic development is quite difficult since alternatives that allocate more costs to residential customers may reduce the disposable income of residential customers that interact with local businesses. Similarly, costs transferred from business to consumers may be partially offset by changes in compensation workers demand to offset the cost of living. Discerning the impact on economic development can be extremely difficult and subject to error.

City of Austin
Issue Paper #2: Water Cost Allocations

Attachment

A

Evaluations of Alternatives

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Evaluations Based on Average Ratings

Cost Allocation Methods

Alternatives	Implementation: Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility	Policy Durability
Commodity / Demand	■■■■	■■■■■	■■■■	■■■■■	■■■■■	■■■■■
Base / Extra-Capacity (Current)	■■■■■■	■■■■■	■■■■■■	■■■■■	■■■■■	■■■■■■

Alternatives	Equity: Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards	
Commodity / Demand	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Base / Extra-Capacity (Current)	■■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	

Alternatives	Customer: Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill		
Commodity / Demand	■■■■■	■■■■■■	■■■■■	■■■■■		
Base / Extra-Capacity (Current)	■■■■■■	■■■■■	■■■■■	■■■■■		

Alternatives	Conservation: Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability		
Commodity / Demand	■■■■■	■■■■■■	■■■■■■	■■■■■		
Base / Extra-Capacity (Current)	■■■■■	■■■■■	■■■■■	■■■■■		

Alternatives	Financial: Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk	
Commodity / Demand	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Base / Extra-Capacity (Current)	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	

Alternatives	Weighted Average Score
Commodity / Demand	■■■■■■■■■■
Base / Extra-Capacity (Current)	■■■■■■■■■■

Average Ratings
Cost Allocation Methods

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Commodity / Demand	3.9	4.9	3.9	4.9	4.9	4.9
Base / Extra-Capacity (Current)	5.9	4.9	5.9	4.9	4.9	5.9
Weights Rated from 0 to 10 (10 most important)	3.4	4.3	4.3	4.5	6.0	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Commodity / Demand	4.9	4.9	4.9	4.9	4.9	
Base / Extra-Capacity (Current)	5.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	5.0	4.8	3.6	4.3	3.8	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Commodity / Demand	4.9	5.9	4.9	4.9		
Base / Extra-Capacity (Current)	5.9	4.9	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.5	4.1	5.5	4.3		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Commodity / Demand	4.9	5.9	5.9	4.9		
Base / Extra-Capacity (Current)	4.9	4.9	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	4.6	4.3	6.2	5.8		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Commodity / Demand	4.9	4.9	4.9	4.9	4.9	
Base / Extra-Capacity (Current)	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.5	6.0	5.8	6.0	

Alternatives	**Weighted Average Score**
Commodity / Demand	592
Base / Extra-Capacity (Current)	608

Evaluations Based on Average Ratings
Time Steps for Cost Allocation Method

	Implementation					
Alternatives	Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility	Policy Durability
Peak Day and Hour (Current)						
Peak Season, Day, and Hour						

	Equity				
Alternatives	Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards
Peak Day and Hour (Current)					
Peak Season, Day, and Hour					

	Customer			
Alternatives	Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill
Peak Day and Hour (Current)				
Peak Season, Day, and Hour				

	Conservation			
Alternatives	Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability
Peak Day and Hour (Current)				
Peak Season, Day, and Hour				

	Financial				
Alternatives	Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk
Peak Day and Hour (Current)					
Peak Season, Day, and Hour					

Alternatives	Weighted Average Score
Peak Day and Hour (Current)	
Peak Season, Day, and Hour	

Average Ratings
Time Steps for Cost Allocation Method

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Peak Day and Hour (Current)	6.0	5.0	5.0	5.0	5.0	5.0
Peak Season, Day, and Hour	5.0	5.0	5.0	5.0	5.0	5.0
Weights Rated from 0 to 10 (10 most important)	3.4	4.3	4.3	4.5	6.0	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Peak Day and Hour (Current)	6.0	5.0	5.0	6.0	5.0	
Peak Season, Day, and Hour	4.0	5.0	5.0	4.0	5.0	
Weights Rated from 0 to 10 (10 most important)	5.0	4.8	3.6	4.3	3.8	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Peak Day and Hour (Current)	5.0	5.0	5.0	5.0		
Peak Season, Day, and Hour	5.0	5.0	5.0	5.0		
Weights Rated from 0 to 10 (10 most important)	5.5	4.1	5.5	4.3		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Peak Day and Hour (Current)	5.0	5.0	5.0	5.0		
Peak Season, Day, and Hour	5.0	5.0	5.0	5.0		
Weights Rated from 0 to 10 (10 most important)	4.6	4.3	6.2	5.8		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Peak Day and Hour (Current)	5.0	5.0	5.0	5.0	5.0	
Peak Season, Day, and Hour	5.0	5.0	5.0	5.0	5.0	
Weights Rated from 0 to 10 (10 most important)	6.7	6.5	6.0	5.8	6.0	

Alternatives	**Weighted Average Score**
Peak Day and Hour (Current)	610
Peak Season, Day, and Hour	588

Evaluations Based on Average Ratings

Direct and Indirect Fire Costs for Private Fire Connections

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Direct Costs Only	■■■■■■	■■■■■■	■■■■■	■■■■■	■■■■■	■■■■■■
Both Direct and Indirect Costs	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Direct Costs Only	■■■■■■	■■■■■■	■■■■■	■■■■■	■■■■■	
Both Direct and Indirect Costs	■■■■	■■■■■	■■■■■	■■■■■	■■■■■	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Direct Costs Only	■■■■■■	■■■■■	■■■■■	■■■■■		
Both Direct and Indirect Costs	■■■■■	■■■■■■	■■■■■	■■■■■		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Direct Costs Only	■■■■■	■■■■■	■■■■■	■■■■■		
Both Direct and Indirect Costs	■■■■■	■■■■■	■■■■■	■■■■■		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Direct Costs Only	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Both Direct and Indirect Costs	■■■■■	■■■■■■	■■■■■	■■■■■	■■■■■	

Alternatives	**Weighted Average Score**
Direct Costs Only	■■■■■■■■■■
Both Direct and Indirect Costs	■■■■■■■■■■

Average Ratings
Direct and Indirect Fire Costs for Private Fire Connections

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Direct Costs Only	5.8	5.8	4.9	4.9	4.9	5.8
Both Direct and Indirect Costs	4.9	4.9	4.9	4.9	4.9	4.9
Weights Rated from 0 to 10 (10 most important)	3.4	4.3	4.3	4.5	6.0	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Direct Costs Only	5.8	5.8	4.9	4.9	4.9	
Both Direct and Indirect Costs	3.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	5.0	4.8	3.6	4.3	3.8	

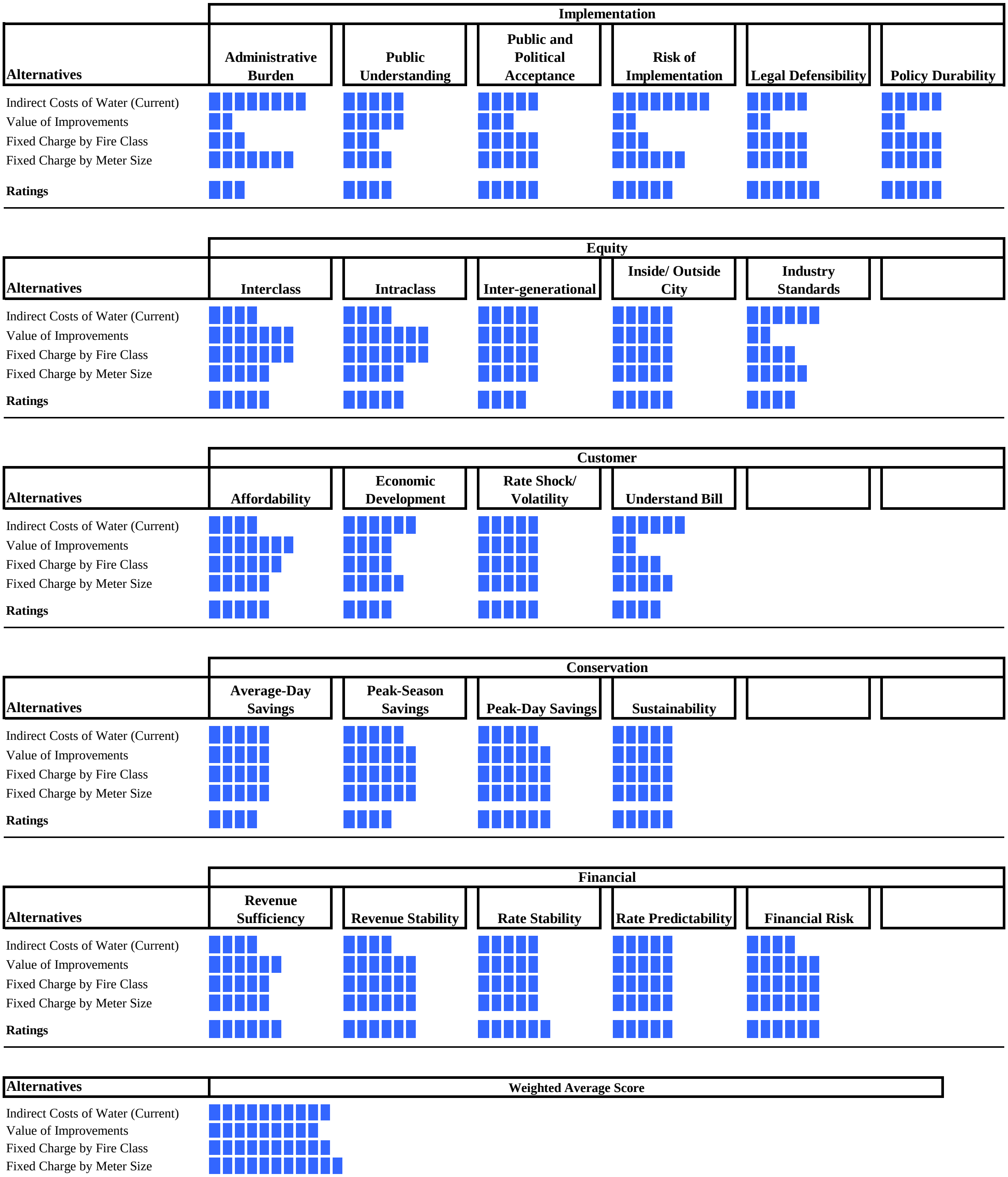
	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Direct Costs Only	5.8	4.9	4.9	4.9		
Both Direct and Indirect Costs	4.9	5.8	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.5	4.1	5.5	4.3		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Direct Costs Only	4.9	4.9	4.9	4.9		
Both Direct and Indirect Costs	4.9	4.9	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	4.6	4.3	6.2	5.8		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Direct Costs Only	4.9	4.9	4.9	4.9	4.9	
Both Direct and Indirect Costs	4.9	5.8	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.5	6.0	5.8	6.0	

Alternatives	**Weighted Average Score**
Direct Costs Only	610
Both Direct and Indirect Costs	588

Evaluations Based on Average Ratings
Recovery Methods for Public Fire Costs



Average Ratings
Recovery Methods for Public Fire Costs

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Indirect Costs of Water (Current)	8.0	5.0	5.0	8.0	5.0	5.0
Value of Improvements	2.0	5.0	3.0	2.0	2.0	2.0
Fixed Charge by Fire Class	3.0	3.0	5.0	3.0	5.0	5.0
Fixed Charge by Meter Size	7.0	4.0	5.0	6.0	5.0	5.0
Weights Rated from 0 to 10 (10 most important)	3.5	4.4	4.6	4.8	6.1	5.0

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Indirect Costs of Water (Current)	4.0	4.0	5.0	5.0	6.0	
Value of Improvements	7.0	7.0	5.0	5.0	2.0	
Fixed Charge by Fire Class	7.0	7.0	5.0	5.0	4.0	
Fixed Charge by Meter Size	5.0	5.0	5.0	5.0	5.0	
Weights Rated from 0 to 10 (10 most important)	5.2	5.0	3.6	4.6	3.8	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Indirect Costs of Water (Current)	4.0	6.0	5.0	6.0		
Value of Improvements	7.0	4.0	5.0	2.0		
Fixed Charge by Fire Class	6.0	4.0	5.0	4.0		
Fixed Charge by Meter Size	5.0	5.0	5.0	5.0		
Weights Rated from 0 to 10 (10 most important)	5.3	4.2	5.3	4.4		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Indirect Costs of Water (Current)	5.0	5.0	5.0	5.0		
Value of Improvements	5.0	6.0	6.0	5.0		
Fixed Charge by Fire Class	5.0	6.0	6.0	5.0		
Fixed Charge by Meter Size	5.0	6.0	6.0	5.0		
Weights Rated from 0 to 10 (10 most important)	4.4	4.4	6.3	5.5		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Indirect Costs of Water (Current)	4.0	4.0	5.0	5.0	4.0	
Value of Improvements	6.0	6.0	5.0	5.0	6.0	
Fixed Charge by Fire Class	5.0	6.0	5.0	5.0	6.0	
Fixed Charge by Meter Size	5.0	6.0	5.0	5.0	6.0	
Weights Rated from 0 to 10 (10 most important)	6.0	6.3	5.7	5.5	6.1	

Alternatives	**Weighted Average Score**
Indirect Costs of Water (Current)	605
Value of Improvements	565
Fixed Charge by Fire Class	612
Fixed Charge by Meter Size	632

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REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Issue Paper #3
Wastewater Cost Allocations

Subject: Wastewater Cost Allocations

Date: January 15, 2008

Introduction

A wastewater cost-of-service analysis is a method of allocating costs (known as revenue requirements) to the customer classes that a utility serves. Over the years, industry standards have evolved to guide practitioners in the conduct of these analyses. This issue paper looks at methods of allocating costs for wastewater utilities.

The Water Environment Federation (WEF) provides many of the industry standards for wastewater ratemaking. This organization publishes an industry manual on wastewater rates entitled *Financing and Charges for Wastewater Systems.*[1] Although the manual covers the principles of wastewater ratemaking in detail, many of the specific methodological options for a specific cost allocation process are left to the practitioner to develop for the particular circumstances. This issue paper explores the cost allocations available to the Austin Water Utility's (AWU) wastewater system.

Overview of the Cost-of-Service Process

The cost-of-service process can be described in nine distinct steps. These are:

1. Determine revenue requirements;
2. Determine customer classes;
3. Estimate customer characteristics;
4. Allocate costs to functions/unit processes;
5. Allocate costs to cost pools;
6. Allocate costs to categories;
7. Allocate costs to customer service characteristics;
8. Allocate costs to customer classes; and
9. Design rates.

This issue paper covers steps 4 through 8. The remaining steps are presented in other issue papers.

Wastewater Strength and Allocation Methods

Wastewater systems are designed to collect, convey, and treat pollutants in the sanitary sewer system. The costs of collection and conveyance are generally related to the volume of wastewater the utility receives from its customers. The cost of treatment is often related to both the volume of wastewater and the effort required to remove the pollutants that are part of the wastewater stream.

[1] Water Environment Federation, *Financing and Charges for Wastewater Systems*, Manual No. 27, (Alexandria, VA: Water Environment Federation, 2004).

The volume of wastewater a utility receives includes the amount of wastewater contributed by the utility's customers and an amount that is introduced in the collection and conveyance system, which is referred to as inflow and infiltration, or I/I. As the name implies, I/I has two principle sources. The first is inflow. Inflow is water introduced to the wastewater collection and conveyance system through direct connections such as catch basins, roof drains, foundation drains, manhole covers, and other similar connections. Infiltration is the flow entering the wastewater collection system through leaky pipes in areas of high groundwater or standing water from storm events, etc. Utilities often invest money to mitigate I/I to avoid the cost of treating what would otherwise be clean water. Generally, utilities spend resources on mitigating I/I until the cost of additional mitigation equals the benefits of recovered flow-related capacity and treatment costs.

I/I is caused by a variety of factors—age of pipe, high groundwater, rainfall—none of which are directly attributable to a specific customer class. I/I therefore, is often attributed to customer classes based on each class's contributed wastewater volumes, number of connections, land area, etc.

Within a wastewater treatment plant, utilities invest in plant and equipment, and incur operating expenses for processes designed to treat specific types of pollutants. For example, many wastewater treatment plants include aeration facilities that introduce oxygen into the wastewater system to facilitate the biological processes that remove certain constituents of the wastewater. With aeration facilities, for example, many utilities incur power costs that are used to mix air (which naturally contains oxygen) with the wastewater. This process, called aeration, is a primary means of reducing the levels of some pollutants in the wastewater.

The wastewater industry has developed measures of the levels of pollutants in wastewater and the appropriate processes used to treat these pollutants. One common measure of the level of pollutants in wastewater is called biochemical oxygen demand (BOD). BOD is a measure of the amount of oxygen required to treat wastewater. Wastewater with higher BOD levels require more aggressive treatment than wastewater with lower BOD levels. Under these circumstances, for example, the utility may spend more on power to aerate wastewater with higher BOD levels than wastewater with lower BOD levels. These measures of wastewater strengths form the basis for allocating costs in a wastewater cost-of-service study.

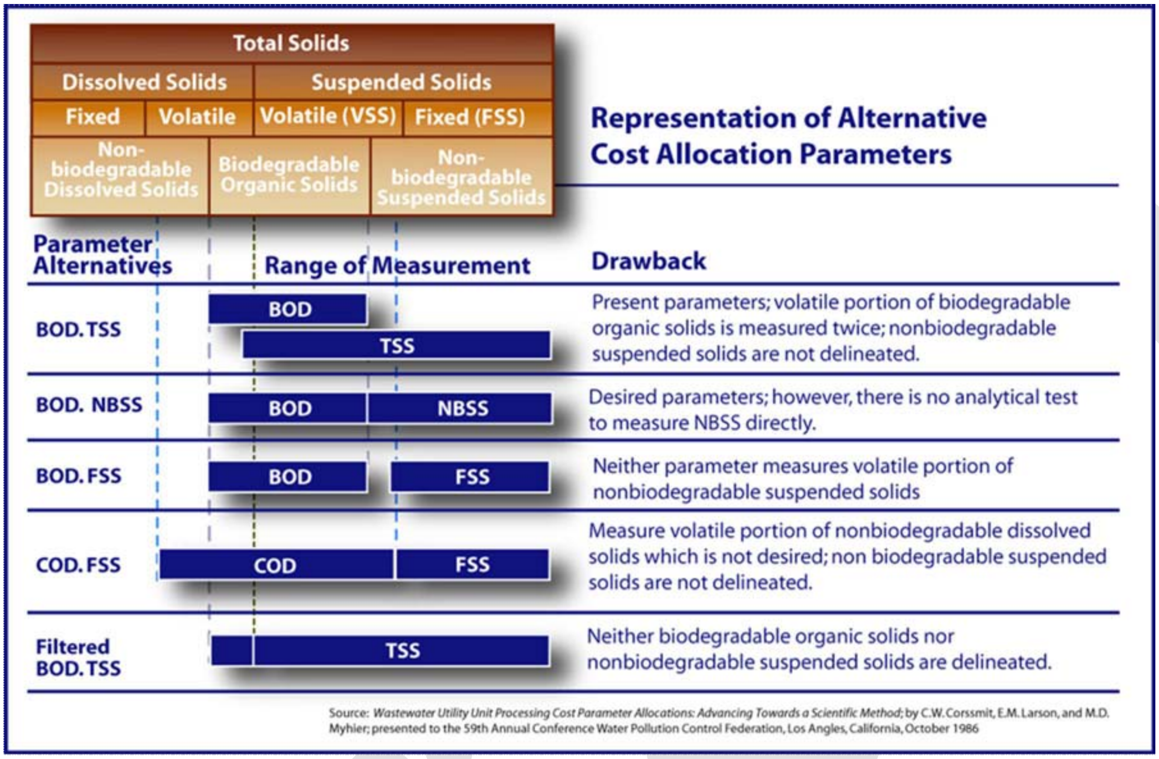

Figure 1: Measures of Wastewater Pollutants

The level of pollutants in wastewater can be characterized in many ways. Figure 1 provides an overview of common measures of a type of pollutants in wastewater commonly referred to as solids. These measures, along with others, are available to allocate costs among customer classes. Identifying the appropriate cost drivers for a wastewater cost-of-service study requires identifying those pollutants that are driving the utility’s costs and allocating the costs associated with treating those pollutants to the cost drivers. The contribution of wastewater strength by customer classes is then estimated and the cost associated with each cost driver is allocated to customer classes based on their contributions.

Wastewater utilities have many steps in the treatment of wastewater that are often called unit processes. These unit processes are placed within a wastewater treatment plant to treat one or more types of pollutants. In some cases, the purpose of the unit process (i.e., the removal of one or more pollutants) is different than the criteria used to size the unit process (e.g., the size may be related to the total volume of wastewater, and therefore, the amount of wastewater, rather than its strength, may be the criteria used to size the facility.)

WEF has identified three fundamental cost allocation approaches for allocating a utility’s costs and, thereby, determining wastewater rates. These methods are:

- Design Basis,

- Functional Basis, and
- Hybrid.

The three fundamental approaches are discussed further below. The primary difference among the approaches is that the design basis allocates costs based on engineering design criteria whereas the functional basis allocates costs based on operational or functional purposes. The hybrid method combines the design and functional bases.

Design Basis Cost Allocation Methodology

This approach recovers operating expenses and capital costs based on the allocation of net plant in service to customer service characteristics using the primary engineering design criteria for each facility. Typical examples of allocation factors under the design criteria are shown by facility type in the WEF Manual, some of which are summarized below:[2]

- Collection sewers, pumping, and lift stations—Peak-flow rates determine the size of mains, so these costs are assigned to the "capacity" cost component.

- Treatment plant – Various treatment plant unit processes are allocated differently. For example, primary and secondary settling basins are assigned to the "volume" cost component because settling detention times are based on design average flow. Aeration basins are assigned to the "BOD" strength cost component as BOD loading determines the size of the basin.

- Support services – Support services and general and administrative are typically allocated proportionately to all other cost components.

- Billing – These costs are assigned to the "customer" cost component.

Functional Cost Allocation Methodology

Under this approach, costs are allocated to customer service characteristic using purpose-based/cost-causative factors. Typical examples of the cost-causative factors used for the functional cost method are shown by facility and unit process in the WEF Manual, some of which are summarized below [3].

- Collection sewers, pumping, and lift stations – The main purpose of these facilities is to convey wastewater at variable rates of flow, so these costs are assigned to the "volume" cost component.

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[2] Water Environment Federation, *Financing and Charges for Wastewater Systems*, Manual No. 27, (Alexandria, VA: Water Environment Federation, 2004).
[3] Water Environment Federation, *Financing and Charges for Wastewater Systems*, Manual No. 27, (Alexandria, VA: Water Environment Federation, 2004).

- Treatment plant – Treatment plant unit processes are allocated according to function. For example, the primary settling basin's main purpose is to remove suspended solids, so costs are assigned to the "suspended solids" cost component. The secondary settling and aeration basins' main purpose is to remove BOD from wastewater, so costs are assigned to the "BOD" cost component.

- Support services – Support services and general and administrative costs are typically allocated proportionately to all other cost components.

- Billing – These costs are assigned to the "customer" cost component.

Hybrid Cost Allocation Methodology

The hybrid method combines both the design and functional approaches. In some cases, the hybrid approach allocates O&M costs using the functional basis and capital costs are allocated using the design basis. In some cases, utilities have taken simple averages of the functional and design bases to create the hybrid.

Findings on Overall Methods

The three fundamental methods are accepted by the industry for use in conducting wastewater cost-of-service studies. The primary differences among the methods are philosophical. Examining a unit process where the allocations under the functional and design basis differ may help illustrate the philosophical differences.

Primary settling basins may be a good example where the allocations differ under the three methods. Primary settling basins are normally sized to meet the hydraulic requirements of the plant. This sizing is required so that the velocity of the wastewater can be low enough to allow certain solids to settle. Under the design basis, therefore, these costs would be allocated based on flow. Under the functional basis, the primary settling basins function to reduce the amount of suspended solids in the wastewater as it passes to subsequent unit processes.

The difference in the allocations illustrates the underlying philosophical differences. Under the design approach, the cost responsibility is assigned to customers in proportion to their contribution to the flow, or ultimate size of the facility in question (in our example here, a primary settling basin.) In other words, those customers with high flows are allocated relatively more of the costs to recognize that the total flow is the sizing criteria for the basins. In essence, the design approach assumes that those with more wastewater volume are driving the design costs, and therefore, these customers should bear a relatively similar burden for the cost allocations.

Under the functional method, cost responsibility is assigned based on each customer's contribution to the suspended solids at the plant. Under this approach, the method assumes that those responsible for the introduction of the suspended solids into the waste stream should bear the burden of the costs. Another way of describing the philosophical differences is that the functional method assigns cost responsibility for introducing waste constituents into the wastewater stream that require removal. Or alternatively, customer classes are made responsible for costs for making the relatively clean flows of other customers dirtier.

The hybrid method often assigns O&M costs based on function and capital costs based on design. In these cases, the capital costs are driven by the design criteria. But the cost of operating the facility and maintaining the facility are borne by customers based on the function. This hybrid approach appeals to some analyst since it mixes the two methods and assigns some costs to each.

Since the differences in the methods are primarily philosophical, no one technical solution exists.

Allocation Steps

Once the overall cost allocation method (i.e., design, functional, or hybrid) is selected, individual approaches for allocating costs must be developed. Both of the allocation methods work with either the cash or utility basis of determining revenue requirements.

O&M Cost Allocations

Equitably allocating the wastewater system's user charge revenue requirements to customer classes involves a multistep process. Beginning with O&M costs, the following steps are required. Allocations of capital-related costs are described in a subsequent subsection of this issue paper.

- Step 1: Functionalizes the costs to appropriate wastewater system functions or unit process.

- Step 2: Allocate the functionalized costs to cost pools. This step identifies O&M costs that are joint (i.e., those costs that benefit all customer classes) or specific to one or more customer classes.

- Step 3: Distribute functionalized costs for each cost pool to cost categories.

- Step 4: Allocate the costs by cost pool and cost category to the appropriate customer service characteristics.

- Step 5: Distribute the O&M costs by customer service characteristic to customer classes for each cost pool based on each class's proportion of the customer service characteristics.

These steps are described in more detail in the following subsections.

Step 1: Functionalize Costs

A wastewater utility's O&M expenditures may be allocated to wastewater system functions or unit processes (e.g., collection, pumping, preliminary treatment, primary treatment, customer services, general administration, etc.) Functionalizing costs in this manner allows the allocation of specific functions to one or more cost pools. This step enhances the accuracy and equity of the wastewater system cost allocation to the customer classes. The wastewater system functions selected depend on the physical nature of the system and the manner in which the utility accounts for its costs. Tentatively, the water system functions may include:

- Collection,
- Pumping
  - Facilities
  - Power
- Treatment
  - Preliminary treatment
  - Primary treatment
  - Aeration
  - Secondary treatment
  - Return sludge pumping
  - Effluent filtration
  - Disinfection
  - Effluent pumping
  - Solids handling
- Customer Services, and
- Indirect Costs (e.g., administrative and general).

Step 2: Assignment of O&M Costs to Cost Pools

This step assigns the O&M costs by function to cost pools. A cost pool is a collection of costs that are shared by a group of one or more customer classes. For example, the joint cost pool is shared by all customer classes. Tentatively, the costs pools may include:

- Joint,
- Wholesale and Industrial Program Costs, and
- Retail Only Costs.

Each of these is described below.

Joint Costs

Joint costs are those costs that are shared by all customers of the wastewater system in proportion to their respective use of the system.

Wholesale and Industrial Program Costs

AWU may incur costs to manage its wholesale and industrial program. These costs would be recovered from these customer classes.

Retail Only

Retail only costs are the costs incurred to provide retail services to AWU's customers. These costs will likely include certain collection system costs that are not incurred to provide service to wholesale customers.

Step 3: Allocation of Pooled Costs to Categories

After costs are allocated to system functions and cost pools, the costs grouped in this manner are then allocated to categories. Cost categories are used to facilitate the allocation of costs by pools to customer service characteristics in Step 4. The previously allocated joint and specific costs are listed by system functions. Each system function can be associated with one or more cost categories. For example, digester costs can be associated with solids handling.

Step 4: Allocation of Costs to Customer Service Characteristics

The assignment of costs to customer service characteristics varies with the allocation methodology used. Regardless of cost allocation method used (i.e., design, functional, or hybrid basis), the cost-of-service analysis requires an assumption on the appropriate customer service characteristics to use.

Considering the operations and design of AWU's system, the customer service characteristics proposed tentatively include:

- Design Basis Cost Allocation Methodology –
  - Volume,
  - BOD
  - Total suspended solids (TSS),
  - Industrial monitoring, and
  - Customer related.

- Functional Cost Allocation Methodology –
  - Volume,
  - BOD
  - TSS,
  - Industrial monitoring, and
  - Customer related.

Step 5: Distribution of Costs to Customer Classes

The next step involves the projections of customer class wastewater flows and their respective wastewater strengths. Flows include both contributed volumes and volumes attributed to a customer class based on the system's infiltration/inflow (I/I). Wastewater strengths typically include BOD and suspended solids (SS), and in some cases measures of nitrogen, phosphorous, and others.

Wastewater Volumes

Wastewater flows include the wastewater contributed by a customer and an amount of system I/I attributed to the customer class. When combined, the two elements equal the wastewater volume.

Biochemical Oxygen Demand (BOD)

BOD is a measure of the concentration of biodegradable solids in wastewater. A BOD_5 test can be used to infer the general quality of the wastewater and its relative cost of treatment. Wastewater treatment facilities include unit processes that are designed and/or operated to reduce the BOD levels in the wastewater. A BOD_5 test is conducted by measuring the amount of dissolved oxygen in a wastewater sample before and after a five-day incubation period. The change in the level of dissolved oxygen is a measure of the oxygen demand placed on the sample by the biochemical process.

Total Suspended Solids (TSS)

Like BOD, TSS is a water quality measurement. It measures the amount of solids suspended in wastewater. A TSS test is conducted by pouring a carefully measured volume of water through a pre-weighed filter of a specified pore size, then weighing the filter again after drying to remove all water. The increase in weight is a dry weight measure of the particulates present in the water sample expressed in units derived or calculated from the volume of water filtered (typically milligrams per liter or mg/l).

Capital Cost Allocations

Allocating capital costs using either the design, functional, or hybrid basis involves steps in addition to those outlined above. Capital costs (whether under the cash or utility basis) are generally allocated to customer classes by allocating the assets that serve each customer class. The value of these assets is called the *rate base* and is normally based on the net book value of the facilities.

Determining each customer class's portion of the system rate base is accomplished by allocating the wastewater system's fixed assets net of accumulated depreciation. Net fixed assets are allocated to functions, cost pools, categories, and customer service characteristics as in Steps 1 through 5 above. The following additional steps result in an allocation of capital assets to customer classes.

- Step 6: Determine the rate base for each customer class.

- Step 7: Determine the rate of return.

- Step 8: Allocate the return on rate base among the customer classes.

Step 6: Determine Rate Base by Customer Class

The first part of determining the rate base for each customer class is to summarize the net fixed assets allocated by cost pool and category to customer service characteristics and customer class. The net fixed assets allocated to each customer class is the value of the plant in service that is used and useful for that customer class less the accumulated depreciation for those assets. The second part of determining rate base by customer class is to calculate an allowance for working capital, or a percentage of the O&M costs allocated to each customer class. The allowance for working capital recognizes the carrying costs of working capital that the utility incurs for operation.

Adding the net plant in service and allowance for working capital results in the rate base attributable to each customer class.

Step 7: Determine Rate of Return

The rate of return used in the analysis depends on the method used to determine total revenue requirements. Under the utility basis, a fair rate of return is assumed to be a return that could be earned by investing the owners' money in a comparable investment, an investment which has similar risks. The rate of return is often referred to as the cost of capital. It is generally calculated using a weighted average of the utility's cost of debt and the return on the utility's equity.

Under the utility basis with cash residual method the rate of return is different for owner and non-owner customers. When using this method of determining revenue requirements, the rate of return for owner customers is calculated after the cost allocated to the non-owner customers is determined. The rate of return for owner customers would equal the return required so that the expected revenue from owner and non-owner customers equals the cash-basis revenue requirements.

Under the cash basis, the rate of return is determined to be the return required to generate the cash-basis needs of the utility. Even though depreciation is not an element of the cash-basis revenue requirements, often a portion of the cash-basis revenue requirements is allocated in the same manner as depreciation. In those cases, the depreciation and O&M costs are subtracted from the total revenue requirements before calculating the required rate of return. The difference, when divided by the total rate base, equals the rate of return used.

Step 8: Allocation of Return on Rate Base to Customer Classes

The final step in allocating capital costs is to allocate the return on rate base to each of the customer classes. The return on rate base for each customer class is calculated by multiplying the rate base allocated to each customer class in Step 6 by the respective rate of return from Step 7. The result of Step 8 is the return on rate base attributable to each customer class.

Allocating Depreciation Expenses

Allocating annual depreciation expenses follows the same steps as for O&M costs. Depreciation is allocated on the same basis as the associated asset. Although depreciation is not an element of revenue requirements under the cash basis, a portion of the capital cost under the cash basis is often allocated in the same manner as depreciation.

Cost of Service by Customer Class

After the revenue requirements are fully allocated by function, pool, and categories to the customer characteristics for each class, the O&M and capital costs are summed for each class to determine the total cost of service by customer class.

Allocation of Inflow and Infiltration Costs

Overview

As described above, the amount of I/I is influenced by a variety of factors including:

- Age of pipe,
- Level of groundwater,
- Soil conditions,
- Rainfall, etc.

None of these influencing factors is directly attributable to a specific customer class.

United States Environmental Protection Agency (USEPA) Guidelines

Based on the 1972 Water Pollution Control Act, as amended, USEPA has issued guidelines in developing wastewater rates for utilities that have participated in its construction-grants program. These guidelines include specific recommendations for the treatment of I/I. The guidelines provide the following options for the allocation and recovery of I/I costs:

- Contributed wastewater volumes. These are estimates of the contributions of wastewater from the customer's premises. For residential customers, contributed wastewater volumes may be estimated from average winter water consumption. Other techniques may be available for other customer classes.

- Number of connections. Under this approach, I/I is attributed to customer classes based on the number of connections each class has within the wastewater system.

- Land Area. Since I/I is often introduced into the collection system, and the ultimate length of pipe in the collection system is based on the total area served, land area is available as a method to allocate and recover I/I costs.

- Property values. For systems that have USEPA approved system of rates based on *ad valorem* property taxes, property values may be used to allocate and recover I/I costs.

Other Observations

The approaches used to allocate and recover I/I costs vary from utility to utility. Some utilities base the allocations of I/I to customer classes based on a combination of the factors listed above. Other utilities use only one of the available methods.

The primary differences in the methods of allocating and recovering I/I costs are based on different philosophies. Some analysts consider I/I cost as another element of the wastewater system that must be managed. And since I/I generally affects the flow-related unit processes the most, the cost associated with I/I are then allocated based on a customer classes' flow. The cost of mitigating I/I are often incurred to augment the hydraulic capacity of the treatment plant and portions of the conveyance system.

Some analyst attempt to allocate the source of I/I back to the customer classes. In some cases, I/I is assumed to occur primarily in the collection system and at the point of connection of customers' services to the sewer laterals. Under this assumption, analyst may allocate I/I on a per customer basis.

AWU is unique since much of its major conveyance systems have historically be placed within natural creeks and streams. Although this placement may maximize the use of gravity to convey wastewater, it likely increases the I/I of the major conveyance systems. This unusual circumstance suggests that I/I does not correlate well to the number of connections.

Methodological Options under Review

When considering the issue of wastewater cost allocations, the following methodological options are important to consider:

1. Which is the most appropriate overall method for allocating costs (i.e., design, functional, or hybrid basis)?

2. What are the appropriate customer service characteristics to use for the cost allocation process (e.g., BOD, TSS, TKN, etc.)?

3. How should I/I cost be allocated and recovered in the cost-of-service analysis?

Each of these issues is explored further in the following sections. The discussion for each issue includes:

- Overview of the issue,
- Description of the alternatives,
- Evaluation of the alternatives using the executive team's evaluation criteria, and
- Consultant's preliminary findings and recommendations.

After presentation to the executive team and public involvement committee, the consulting team will finalize its recommendations.

Issue 1: Which is the most appropriate overall method for allocating costs?

Overview of the Issue

The first cost allocation policy to resolve is which overall cost allocation method is best for AWU and its customers. The alternative selected will determine the method of allocating costs to each of the customer classes. WEF has identified three fundamental cost allocation approaches for allocating a utility's costs and, thereby, determining wastewater rates.

Description of Alternatives

The three available alternative methods are:

1. Design basis (current approach),
2. Functional basis, and
3. Hybrid where O&M costs are allocated based on function, and capital costs based on based on design.

The primary difference among the alternative methods is that the design basis allocates costs based on engineering design criteria whereas the functional basis allocates costs based on operational or functional purposes. The hybrid allocates O&M costs based on function and the capital costs based on design. Examples of how the allocations would be done under both approaches are discussed earlier in this paper.

Evaluation of Alternatives

Attachment A presents the weighted evaluations of the alternatives.

The differences in the evaluation of the three approaches are minor. In general, the hybrid approach faired somewhat better than the other approaches because it may be more equitable since it allocates O&M costs based on function and capital costs based on design. This split in the allocation method is probably more important to some unit processes than it is to others. When, for example, power and/or chemicals are used in a unit process sized to meet peak-flow conditions, but the power or chemical is used to eliminate a constituent in the wastewater, allocating these power and chemical costs based on each classes' contribution of the constituent may provide a more equitable outcome.

AWU currently uses the design basis, and, therefore, the administrative burden of the design basis is assumed to be less than the other methods. Because the hybrid approach requires two allocation bases, we assume it is the most burdensome. Regardless, the administrative burdens of all three alternatives are minimal. The public and political acceptance of the hybrid method may exceed the other methods. This acceptance may be the result of a preference for charging customers based on both their contributions of the pollutants being treated and their contribution to the capacity requirements of the system. Because the design basis is the status quo, it was considered to have the least risk of implementation. However, the risk of implementation is likely low regardless of alternative. The alternatives did not vary for the other implementation criteria.

Both interclass and intraclass equity would likely be improved by the hybrid approach. This increase in equity is brought about by the split allocations—O&M based on function and capital based on design. The alternatives did not vary for the other equity criteria.

The customer criteria do not vary based on the alternatives.

Because the design basis may increase the unit cost of disposal for wastewater on a volume basis, it may have an incidental impact on water conservation on an average-day basis. This impact is likely to be quite small and would not be expected to include much impact on peak-season or peak-day demands. Sustainability may be improved by the hybrid approach since wastewater customers will have an incentive to reduce both their flows and wastewater pollutants. This incentive could result if the extra-strength surcharges imposed by AWU are higher to reflect the modified cost allocations.

The financial criteria do not vary based on the alternatives.

Preliminary Findings and Recommendations

The consulting team tentatively recommends AWU use the hybrid approach for allocating costs. This method appears more equitable to AWU's customers and does not introduce significant administrative burden.

Issue 2: What are the appropriate customer service characteristics to use for the cost allocation process (e.g., flow, BOD, TSS, etc.)?

Overview of the Issue

Regardless of cost allocation approach selected, the cost-of-service analyses will require the selection of customer service characteristics for the cost allocations. The selection of the customer service characteristics determines which measures of wastewater strength are included in the cost allocations.

In developing an appropriate list of customer service characteristics, the analyst may consider the following standards:

1. Does the utility incur cost to treat the constituent that comprises the customer service characteristic?

2. Do customers vary in their contribution of the constituent under consideration? Is the contribution by customers closely correlated with another customer service characteristic already being used?

3. Can the utility measure the differences in the contributions by customer class with reasonable accuracy?

The first standard considers costs. Since the purpose of identifying a customer service characteristic and the corresponding wastewater constituent is to allocate costs, those constituents that are not treated or controlled may not warrant including in the cost allocations. The constituents that are responsible for costs vary by utility. For example, some utilities are required to control the total heat load they place on their receiving waters. In these cases, utility may incur significant costs to manage the heat of its wastewater discharge and temperature may be an important customer service characteristic. On the other hand, other utilities may not be required to control temperature and spend very little to mitigate this characteristic of wastewater. In some cases, wastewater utilities incur costs to treat a constituent in wastewater even if that constituent is not regulated as part of the utility's discharge permit.

The second standard addresses the variation in contributions of a constituent by customer class. If all customers contribute an equal concentration of the constituent measured by the customer service characteristic in question, then very little benefit would be derived by separating the costs for this additional customer service characteristic. Similarly, if the contribution of a constituent under consideration as a customer service characteristic is correlated to another constituent being measured, then the costs of the correlated constituent can be allocated according to the contributions of the original constituent. In general, because of the administrative cost of conducting testing, etc., adding constituents to the list of customer service characteristics should be carefully considered.

The final standard is the ability to accurately measure variations in wastewater contributions by class. Using tests that are subject to significant sampling error may reduce the overall accuracy of the resulting cost allocations. Therefore, the impact of the sampling error should be incorporated in any decision regarding the selection of customer service characteristics.

Description of Alternatives

Many alternative measures of wastewater strength exist. However, considering the three standards listed above, three alternatives appear most relevant to AWU. These are:

1. Flow, BOD, and TSS only (current);
2. Add Total Kjeldahl Nitrogen (TKN)[4]; and
3. Add Phosphorus.

For this evaluation, the current approach is compared to approaches that add either TKN or Phosphorus to the list of customer service characteristics included in the cost allocations. The selection of appropriate customer service characteristics for the cost-of-service analysis depends on the design and operation of the wastewater system.

Evaluation of Alternatives

Overall, our evaluation suggests that AWU may consider collecting sampling data on TKN and Phosphorus to determine the importance of these customer service characteristics in allocating costs in the future. Without adequate data, it may be difficult to implement these cost allocations at this time. Specifically, the utility should consider collecting TKN and Phosphorus data as part of its industrial pretreatment program.

When considering the addition of either customer service characteristic, the administrative burden and risk of implementation were of particular concern. Currently AWU does not collect samples from its industrial pretreatment program for these constituents. Developing accurate cost allocations by customer class would likely require a significant sampling period to acquire adequate data. This sampling period might delay implementation of this study and present other administrative burdens. This likely delay resulted in a lower rating for these alternatives for public acceptance. It is likely that the importance of allocating costs to either TKN or Phosphorus will become increasingly important in the future. For that reason the addition of TKN and Phosphorus were considered to meet the policy durability criterion better than the current approach.

[4]Total Kjeldahl Nitrogen (TKN) is the sum of organic nitrogen, ammonia, NH_3, and ammonium, NH_{4+} in biological wastewater treatment. TKN is determined in the same manner as organic nitrogen, except that the ammonia is not driven off before the digestion step.

The equity criteria generally favored the addition of TKN and Phosphorus. That finding recognizes the impact that these constituents likely have on the treatment costs at AWU's wastewater treatment facilities. Allocating costs to these customer service characteristics likely improves the interclass and intraclass equity of the cost allocations. Intergenerational and inside-outside city equity are likely unaffected by the change in customer service characteristics. The current approach is the most common used throughout the industry, and, therefore, received a slightly higher rating. Although somewhat less common than using flow, BOD, and TSS alone, allocating costs to TKN and Phosphorus are well within the industry standard. Therefore, the difference in rating for this criterion is relatively small.

The customer criteria do not vary based on the alternatives.

Sustainability may be enhanced by adding cost allocations based on TKN or Phosphorus customer service characteristics. If AWU adopts extra-strength surcharges for these constituents, customers with higher loadings may adopt practices that reduce their overall contribution of the constituent to the wastewater system, thereby reducing the environmental impacts of treating these constituents. The other conservation criteria do not vary based on the alternatives.

The financial criteria do not vary based on the alternatives.

Preliminary Findings and Recommendations

The consulting team recommends AWU implement a sampling protocol to develop data on TKN and Phosphorus for its industrial pretreatment program. Once data are available, the consulting team recommends that AWU consider adding these customer service characteristics to its cost-of-service methodology. The consulting team further recommends that the cost-of-service model be developed to facilitate the introduction of these customer service characteristics.

Issue 3: How should I/I be estimated and allocated in the cost allocation process?

Overview of the Issue

The total volume of wastewater at AWU's wastewater treatment plants consists of contributed wastewater and inflow and infiltration (I/I). Infiltration is the flow entering the sanitary sewer resulting from high groundwater or precipitation that occurred days or weeks before the observed flow in the sanitary sewer. Inflow results from rainfall that enters the sanitary collection system through a number of direct connections such as catch basins, roof drains, foundation drains, and manhole covers. The I/I in the system may be estimated based on available studies or comparisons of contributed wastewater and metered plant flows[5]. Customers generally cannot influence the level of I/I in the system. Generally, the utility mitigates I/I to reduce the flow-related costs of treatment and allow the flow-related capacity of the facilities to be available to customers, thereby avoiding expansions of capacities. Utilities generally establish a threshold for cost-effectiveness of I/I abatement measures based on the present worth cost of conveying and treating I/I.

The cost associated with collecting, conveying, and treating I/I must be allocated within the cost-of-service methodology. Currently the assumed I/I flow used to determine the cost of service in AWU's wastewater system is 10.5 percent of total flows.

Description of Alternatives

As described on page 11of this issue paper, the USEPA has issued guidelines on the allocation and recovery of I/I costs using several approaches. Based on these approaches, four alternatives are evaluated here.[6] These are:

1. Combined connections and volume (Current),
2. Contributed wastewater volume,
3. Number of connections, and
4. Land area.

As described on page 12, the primary differences among the alternatives are base on alternative philosophies regarding the appropriate allocation of costs. AWU currently uses the combined approach which attributes 50 percent of the I/I flows to customer classes based on the number of connections and 50 percent based on the class' contributed wastewater flow. The other approaches are consistent with USEPA guidelines.

Evaluation of Alternatives

Implementing the first three alternatives should be simple. A significant administrative burden is expected from using land area since these data are not readily available. For similar reasons, the land area has a greater risk of implementation. Public understanding may be enhanced by a simpler method, so both contributed wastewater volume and number of connections scored somewhat better than the combined approach. The number of connections may be slightly less understandable since most costs spent on I/I are incurred to augment flow-related capacities of the utility (e.g., collection, lift stations, treatment, etc.) All of the alternatives are legally defensible since they are specifically identified by the USEPA. Also, all the alternatives should have similar policy durability.

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[5] Water Environment Federation, *Financing and Charges for Wastewater Systems*, Manual No. 27, (Alexandria, VA: Water Environment Federation, 2004).
[6] Since AWU does not base its user charges on *ad valorem* property taxes, the value of property would not be consistent with USEPA guidelines. Therefore, it is not considered in this evaluation.

Interclass and intraclass equity should not be affected by the alternatives. As mentioned above, the difference in philosophies may be reflected by differences in preferences for each of the alternatives. These preferences may be reflected in how one evaluates interclass and intraclass equity. Other than philosophic reasoning, no technical advantage for interclass and intraclass equity exists. Intergenerational and inside/outside city equity would not vary by alternative. Each of the alternatives is consistent with industry standards, but combined approach and land area are relatively less common.

Since residential customers have relatively more connections than flow, allocating I/I to classes based on the number of connections may increase the cost to residential customers, thereby reducing affordability. Similarly, because the combined approach includes an element allocated based on the number of connections, it too may be less affordable. The opposite is likely true for economic development. Since commercial and industrial customers likely have fewer connections than flow, allocating costs based on the number of connections may provide more economic development benefits. Basing the allocation on flow would likely increase the costs to non-residential customers thereby reducing their ratings for economic development. The other customer criteria do not vary based on the alternatives.

Since customers cannot control the system's I/I, the conservation criteria do not vary based on the alternatives.

The financial criteria do not vary based on the alternatives.

Preliminary Findings and Recommendations

The consulting team recommends AWU allocate and recover its I/I cost based on the contributed flow of each customer class. This recognizes the fact that individual customers cannot manage I/I, and that the cost of I/I is primarily in consuming flow-related capacity.

A2908-083

City of Austin
Issue Paper #3: Wastewater Cost Allocations

Attachment

A

Evaluations of Alternatives

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Evaluations Based on Average Ratings
Cost Allocation Methods

Alternatives	Implementation: Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility	Policy Durability
Design Basis (Current)	■■■■■■	■■■■■	■■■■	■■■■■■	■■■■■	■■■■
Functional Basis	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■
Hybrid Basis	■■■■	■■■■■	■■■■■■	■■■■■	■■■■■	■■■■■■
Ratings	■■■■	■■■■■	■■■■■	■■■■	■■■■■	■■■■■

Alternatives	Equity: Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards	
Design Basis (Current)	■■■■	■■■■	■■■■■	■■■■■	■■■■■	
Functional Basis	■■■■	■■■■	■■■■■	■■■■■	■■■■■	
Hybrid Basis	■■■■■■	■■■■■■	■■■■■	■■■■■	■■■■■	
Ratings	■■■■■	■■■■■	■■■■	■■■■	■■■■	

Alternatives	Customer: Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill		
Design Basis (Current)	■■■■■	■■■■■	■■■■■	■■■■■		
Functional Basis	■■■■■	■■■■■	■■■■■	■■■■■		
Hybrid Basis	■■■■■	■■■■■	■■■■■	■■■■■		
Ratings	■■■■■■	■■■■	■■■■■	■■■■		

Alternatives	Conservation: Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability		
Design Basis (Current)	■■■■■■	■■■■■	■■■■■	■■■■■		
Functional Basis	■■■■■	■■■■■	■■■■■	■■■■■		
Hybrid Basis	■■■■■	■■■■■	■■■■■	■■■■■■		
Ratings	■■■■■	■■■■	■■■■■■	■■■■■■		

Alternatives	Financial: Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk	
Design Basis (Current)	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Functional Basis	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Hybrid Basis	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Ratings	■■■■■■■	■■■■■■	■■■■■■	■■■■■■	■■■■■■	

Alternatives	Weighted Average Score
Design Basis (Current)	■■■■■■■■■■
Functional Basis	■■■■■■■■■■
Hybrid Basis	■■■■■■■■■■

Average Ratings
Cost Allocation Methods

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Design Basis (Current)	6.0	5.0	4.0	6.0	5.0	4.0
Functional Basis	5.0	5.0	5.0	5.0	5.0	4.0
Hybrid Basis	4.0	5.0	6.0	5.0	5.0	6.0
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Design Basis (Current)	4.0	4.0	5.0	5.0	5.0	
Functional Basis	4.0	4.0	5.0	5.0	5.0	
Hybrid Basis	6.0	6.0	5.0	5.0	5.0	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Design Basis (Current)	5.0	5.0	5.0	5.0		
Functional Basis	5.0	5.0	5.0	5.0		
Hybrid Basis	5.0	5.0	5.0	5.0		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Design Basis (Current)	6.0	5.0	5.0	5.0		
Functional Basis	5.0	5.0	5.0	5.0		
Hybrid Basis	5.0	5.0	5.0	6.0		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Design Basis (Current)	5.0	5.0	5.0	5.0	5.0	
Functional Basis	5.0	5.0	5.0	5.0	5.0	
Hybrid Basis	5.0	5.0	5.0	5.0	5.0	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
Design Basis (Current)	593
Functional Basis	585
Hybrid Basis	622

Evaluations Based on Average Ratings

Selection of Customer Service Characteristics

Alternatives	Implementation					
	Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility	Policy Durability
BOD and TSS Only						
Add TKN						
Add Phosphorous						
Ratings						

Alternatives	Equity					
	Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards	
BOD and TSS Only						
Add TKN						
Add Phosphorous						
Ratings						

Alternatives	Customer					
	Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill		
BOD and TSS Only						
Add TKN						
Add Phosphorous						
Ratings						

Alternatives	Conservation					
	Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability		
BOD and TSS Only						
Add TKN						
Add Phosphorous						
Ratings						

Alternatives	Financial					
	Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk	
BOD and TSS Only						
Add TKN						
Add Phosphorous						
Ratings						

Alternatives	Weighted Average Score
BOD and TSS Only	
Add TKN	
Add Phosphorous	

Average Ratings
Selection of Customer Service Characteristics

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
BOD and TSS Only	7.0	5.0	6.0	7.0	5.0	4.0
Add TKN	3.0	5.0	5.0	3.0	5.0	6.0
Add Phosphorous	3.0	5.0	5.0	3.0	5.0	6.0
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
BOD and TSS Only	4.0	4.0	5.0	5.0	6.0	
Add TKN	5.0	5.0	5.0	5.0	5.0	
Add Phosphorous	5.0	5.0	5.0	5.0	5.0	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
BOD and TSS Only	5.0	5.0	5.0	5.0		
Add TKN	5.0	5.0	5.0	5.0		
Add Phosphorous	5.0	5.0	5.0	5.0		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
BOD and TSS Only	5.0	5.0	5.0	5.0		
Add TKN	5.0	5.0	5.0	6.0		
Add Phosphorous	5.0	5.0	5.0	6.0		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
BOD and TSS Only	5.0	5.0	5.0	5.0	5.0	
Add TKN	5.0	5.0	5.0	5.0	5.0	
Add Phosphorous	5.0	5.0	5.0	5.0	5.0	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
BOD and TSS Only	612
Add TKN	596
Add Phosphorous	596

Evaluations Based on Average Ratings
Allocation and Recovery of I/I

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Combined Connections and Volume (Current)						
Contributed Wastewater Volume						
Number of Connections						
Land Area						
Ratings						

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Combined Connections and Volume (Current)						
Contributed Wastewater Volume						
Number of Connections						
Land Area						
Ratings						

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Combined Connections and Volume (Current)						
Contributed Wastewater Volume						
Number of Connections						
Land Area						
Ratings						

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Combined Connections and Volume (Current)						
Contributed Wastewater Volume						
Number of Connections						
Land Area						
Ratings						

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Combined Connections and Volume (Current)						
Contributed Wastewater Volume						
Number of Connections						
Land Area						
Ratings						

Alternatives	**Weighted Average Score**
Combined Connections and Volume (Current)	
Contributed Wastewater Volume	
Number of Connections	
Land Area	

Average Ratings
Allocation and Recovery of I/I

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Combined Connections and Volume (Current)	5.1	4.1	5.1	5.1	5.1	5.1
Contributed Wastewater Volume	6.2	6.2	5.1	5.1	5.1	5.1
Number of Connections	6.2	5.1	4.1	5.1	5.1	5.1
Land Area	2.1	3.1	3.1	2.1	5.1	5.1
Weights Rated from 0 to 10 (10 most important)	4.0	5.1	5.3	4.3	5.1	5.0

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Combined Connections and Volume (Current)	5.1	5.1	5.1	5.1	4.1	
Contributed Wastewater Volume	5.1	5.1	5.1	5.1	5.1	
Number of Connections	5.1	5.1	5.1	5.1	5.1	
Land Area	5.1	5.1	5.1	5.1	3.1	
Weights Rated from 0 to 10 (10 most important)	5.3	5.0	4.0	3.9	3.9	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Combined Connections and Volume (Current)	5.1	5.1	5.1	5.1		
Contributed Wastewater Volume	6.2	4.1	5.1	5.1		
Number of Connections	4.1	6.2	5.1	5.1		
Land Area	5.1	5.1	5.1	5.1		
Weights Rated from 0 to 10 (10 most important)	5.6	4.2	4.7	4.1		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Combined Connections and Volume (Current)	5.1	5.1	5.1	5.1		
Contributed Wastewater Volume	5.1	5.1	5.1	5.1		
Number of Connections	5.1	5.1	5.1	5.1		
Land Area	5.1	5.1	5.1	5.1		
Weights Rated from 0 to 10 (10 most important)	4.6	4.5	6.0	5.5		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Combined Connections and Volume (Current)	5.1	5.1	5.1	5.1	5.1	
Contributed Wastewater Volume	5.1	5.1	5.1	5.1	5.1	
Number of Connections	5.1	5.1	5.1	5.1	5.1	
Land Area	5.1	5.1	5.1	5.1	5.1	
Weights Rated from 0 to 10 (10 most important)	6.2	6.2	5.7	5.7	6.2	

Alternatives	**Weighted Average Score**
Combined Connections and Volume (Current)	606
Contributed Wastewater Volume	626
Number of Connections	613
Land Area	561

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REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Issue Paper #4
Customer Classification

Subject: Classifying Customers, Estimating Peaking Factors and Wastewater Strengths

Date: February 15, 2008

Introduction

Water and wastewater costs-of-service analyses use customer classification approaches to segregate customers into classes that have relatively similar costs of service. Specifically, the customer classification approach identifies customers that use the utility's facilities in similar manners, thereby having similar costs of service. For water utilities, the primary driver is the nature of customer peaking. For wastewater utilities, the primary drivers are measures of wastewater flows and strengths.

In addition to segregating customers, methods of estimating peaking characteristics for water customers and wastewater strengths for wastewater customers are also used to allocate costs in a cost-of-service analysis.

This issue paper discusses the approaches to customer classification and methods of estimating peaking factors and wastewater strengths.

Customer Classification

Purpose of Customer Classification

The industry accepted methods for classifying customers are outlined by the American Water Works Association (AWWA) for water and the Water Environment Federation (WEF) for wastewater. One objective in classifying customers is to recover costs more fairly and equitably. That is, to recover costs that reflects the cost of providing services.

Factors for Classifying Customers

The factors for classifying customers, as described by both AWWA and WEF include:

1. General service requirements;
2. Demand patterns or usage characteristics; and
3. Geographic location.

General service requirements refer to the level of service that a customer receives that make it unique from other customers, (e.g., retail versus wholesale customers.) Water demand patterns refer to peak-day and peak-hour demands placed on the system, relative to average demand. For wastewater, the usage characteristics include wastewater strengths such as biochemical oxygen demand, total suspended solids, etc. For some utilities, geographic location may be a consideration because there may be additional physical demands placed on a system to be able to serve customers outside the city.

With all three factors, legal requirements should be considered in classifying customers when a wholesale contract is involved. Requirements may also be defined by city ordinances, charters, etc., as they relate to serving outside-city customers.

The next section discusses the industry approaches for defining customer classes for water and wastewater. There are different approaches to classify customers, and there are limitations and costs associated with capturing the data needed to define those classes.

Common Industry Approaches

Water

Water utilities typically have a minimum of three principal customer classes[1]:

1. Residential
2. Commercial
3. Industrial

How these customer classes are defined varies from utility-to-utility. A good example of this variability is with multifamily. Depending on the number of units, utilities may classify multifamily customers as residential, commercial, or, as in the case with Austin Water Utility (AWU), as a separate class. The same distinctions can be made within the industrial class, e.g., industrial customers with high or low peaking factors. Developing a customer classification approach begins with understanding the water use characteristics, or demand patterns, of the customers in question.

General water service requirements address the level of service that a particular customer or class of customers receives that is different from other customers. Wholesale customers are good examples since they often receive a different level of service than the other customers. For purposes of defining the level of service for a wholesale customer, AWWA recommends reviewing the following factors:

- Wholesale purchaser's customer-class characteristics;
- Wholesale purchaser's distribution system arrangement;
- Number and location of booster pumping stations operated by the wholesale purchaser;
- Number, location, and size of distribution storage reservoirs operated by the wholesale purchaser; and
- Limitations imposed by the selling utility's own transmission and distribution system.[2]

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[1] American Water Works Association, *Manual of Water Supply Practices-M1, Principles of Water Rates, Fees, and Charges*, Fifth Edition, (Denver, Colorado: American Water Works Association, 2000).
[2] American Water Works Association.

These factors can be reviewed for outside-city customers, contract customers, and large industrial customers.

Wastewater

Wastewater utilities often use residential, commercial, and industrial customer classifications. However, rather than demand patterns, wastewater utilities normally use strength characteristics for wastewater classification purposes. Because of the costs associated with gathering strength information (e.g., biochemical oxygen demand, total suspended solids, nitrogen, phosphorous, etc.), obtaining data for wastewater classifications presents a challenge. There are two approaches generally used for wastewater rate design. Although rate design is an issue for a subsequent issue paper, the choice of rate design may affect the classification of customers. The general approaches to wastewater rate design include:

1. Extra-strength surcharges; and
2. Strength-based classifications.[3]

Under the extra-strength surcharge approach, costs associated with serving high-strength customers are separated from the total costs, and what remains is recovered from the non-surcharged customers. Utilities with established pretreatment programs have strength information from their extra-strength customers to implement this type of approach.

Strength-based classifications[4] require more information than is typically available from pretreatment programs. Short of extended, site-specific sampling, there are methods for approximating the strengths by types of businesses, (e.g., dry cleaners, restaurants, etc.) Utilities may use multiple sources for obtaining strength-based information in order to classify their commercial and industrial customers. Estimating wastewater strengths is discussed further in this paper.

Some utilities mix the two general approaches to enhance the equitability of their system of rates while maintaining control of the costs of sampling and administration.

Estimating Peaking Factors by Class

Peaking Factors in Setting Water Rates

Water systems are designed to have sufficient capacity to meet average and peak demands of their customers. Because customers or groups of customers use water differently, their capacity requirements and usage demands are unique. Issue Paper #2 presents more information on the role of peaking factors in setting water rates.

[3] Water Environment Federation, *Financing and Charges for Wastewater Systems*, Manual No. 27, (Alexandria, VA: Water Environment Federation, 2004).
[4] The strength-based classification is also referred to as the quantity/quality method.

Common Data Limitations

Customer class peaking factors serve as the basis to allocate functionalized costs to each customer class. Customer class peaking factors are based on peak-day and peak-hour demands. These demands are not typically available on a customer class level. In fact, usage data for individual customer classes are typically available only on a monthly basis (or in some cases, less frequently.) Nonetheless, estimates of peaking factors by customer class can serve as a proxy to assign functional cost components in an equitable manner.

Method of Prorating System-Wide Peaking Factors

Considering the limitations on meter reading frequencies, the water industry has developed approaches to estimate peaking factors by customer class. Some utilities maintain meters that record daily and hourly reads for a sample of customers. In fact, during the early 1990s AWU did just that. The costs of these programs are often considerable and the challenges of attaining usable data are significant. For those reasons, AWU abandoned its daily and hourly meter-reading program.

Published data from comprehensive sampling programs may be used to develop estimates of peaking factors by class. However, these data are often specific to the climatic and demographic conditions where the studies are conducted and generally do not provide adequate information for other utilities.

As an alternative, peaking factors are often derived by prorating the system-wide peaking factors to customer classes based on each class's contribution to the system peak-month demands. The derivation of customer class peaking factors uses the following information:

- System average-day demands
- System peak-day demands
- System peak-hour demands
- System peak-month demands
- Customer class average-month and peak-month demands

The following formulas are often used:

$$Class\ Peak\ Day\ Factor = \left(\frac{Class\ Peak\ Month\ Demand}{Class\ Average\ Month\ Demand}\ X\ \frac{System\ Peak\ Day\ Demand}{System\ Peak\ Month\ Demand} \right)$$

And:

$$Class\ Peak\ Hour\ Factor = \left(\frac{Class\ Peak\ Month\ Demand}{Class\ Average\ Month\ Demand}\ X\ \frac{System\ Peak\ Hour\ Demand}{System\ Peak\ Month\ Demand} \right)$$

Preliminary Findings for Austin

Attachment A presents our preliminary findings for AWU. Table A-1 presents a summary of monthly consumption by class from AWU's billing system for 2003 to 2006. These data were calculated using the total consumption of bills issued by month during that period. Also shown in Table A-1 are totals by class for the four-year period analyzed, and the maximum month total by class. AWU uses non-coincidental peak month totals for its rate methodologies. We have shown the same in Table A-1.

Table A-2 provides a summary of daily consumption by class. Also calculated in Table A-2 are the average daily consumption by class, peak-season daily consumption by class, and peak-month daily consumption by class. Again, the peak-month numbers represent the non-coincidental peak months for each class.

Table A-3 presents the estimated peaking factors by class using the proration method discussed above. The average-day demand, peak-season demand, and peak-month demand by class from Table A-2 were converted to millions of gallons per day (MGD). The peak-season demand was divided by the average-day demand for each class to estimate the peak-season peaking factor.[5]

Using system-wide peak-day and peak-hour demand data provided by AWU, we estimated system-wide peaking factors for peak-day and peak-hour demands. These factors were then prorated to each class using the formulas described above. Table A-4 provides a summary of the estimated peaking factors.

Estimating Wastewater Strengths by Class

Wastewater Strengths in Setting Wastewater Rates

Variations in wastewater strengths account for much of the differences in providing treatment service to a utility's customers. Estimating the differences in wastewater strengths by customer class, therefore, is important to estimating the cost of service. Issue Paper #3 included a discussion of the impact of wastewater strengths on the cost of service.

Common Data Limitations

Collecting wastewater strength data is often quite expensive and in many cases, very difficult. The process of determining strength requires laboratory sampling of wastewater collected directly from customer connections. Also, operating concerns often suggest that multiple samples be taken for customers to ensure the samples are representative of the customer's overall loadings. These limitations generally mean wastewater sampling is limited to industrial customers and customers with significant wastewater strengths.

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[5] The peak-season factors are by definition, coincidental peaking factors. That is, these peaking factors measure the ratio of demands by customers during the utility's peak season to average annual.

AWU's commercial and industrial sampling program is very comprehensive and provides better data than most utilities.

Method of Balancing Wastewater Strength Estimates

Developing estimates of wastewater strengths by customer class is normally accomplished by using estimates developed from local samples with published information. Local samples for AWU include the extensive sampling program conducted by AWU for its high-strength commercial and industrial customers. The process of developing wastewater strength estimates is often called mass balancing.

The approach attempts to determine concentrations of pollutants for each class so that the total pollutant load measured at the wastewater treatment plant roughly approximates the assumed pollutant concentrations and contributed flow of each customer class.[6] In other words, the analyst uses the best estimates of concentrations and contributed flow for those classes where data exists, and attributes the remaining loadings to the other classes. The loadings that remain are typically converted to concentrations and assigned to the other classes.

The following information is required to prepare a mass balance:

- Estimates of wastewater volumes received at the wastewater treatment plants
- Concentrations of wastewater pollutants as sampled at the wastewater treatment plant (e.g., BOD, TSS, TKN, Phosphorus, etc.)
- Strength data for customers within AWU's wastewater sampling program
- Measures of contributed flow by customer class

A study conducted by the California State Water Resources Board and the Environmental Protection Agency (EPA) in 1982 (subsequently revised in 1998,) developed a listing of common commercial customer classes with estimated strengths. This document has been used in numerous studies over the years and is accepted as a proxy for estimating commercial customer class strengths. Combining the estimates of contributed flows for each class and the concentrations from the California study, with the contributions from those customers with sampling data, the concentrations of pollutants in non-commercial wastewater can be estimated.

Preliminary Findings for Austin

Attachment B presents an example of a mass balance calculation for two treatment plants: the Walnut Creek Wastewater Treatment Plant and the South Austin Regional Wastewater Treatment Plant. Data for the Govalle treatment plant was incomplete, and therefore not included in the analysis. Data from four of AWU's large-volume customers (e.g., Freescale Semiconductors, Samsung, Spansion, and the University of Texas) were

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[6] Wastewater concentrations are a measure of the amount of pollutant in a given volume of wastewater. These concentrations are converted to the weight of the pollutant load when the flows are estimated.

collected and subtracted from the system total to show the contribution of all other customer classes on wastewater flow and strength.

Methodological Options Under Review

This issue paper examines three policy questions relating to the classification of customers. These policies are:

1. Should the large-volume class (i.e., industrial customers) be disaggregated?

2. Should the threshold for inclusion in the large-volume class be adjusted?

3. Should an irrigation class be created?

Each of these issues is explored further in the following sections. The discussion for each issue includes:

- Overview of the issue,
- Description of the alternatives,
- Evaluation of the alternatives using the executive team's evaluation criteria, and
- Consultant's preliminary findings and recommendations.

After presentation to the executive team and public involvement committee, the consulting team will finalize its recommendations.

Issue 1: Should the large-volume customer class be disaggregated?

Overview of the Issue

As the name implies, large-volume customers have a significant impact on the total water and wastewater services provided by AWU. In the past, these customers have been grouped into one customer class and their demands aggregated to calculate a class-average peaking factor. Accordingly, the cost-of-service rates for these customers were based on the average cost of serving the customer class as a whole.

Each wholesale customer, on the other hand, is treated as a single customer class within AWU's rate setting process. The question addressed here is whether a similar approach should be used for large-volume customers.

Description of Alternatives

Two alternatives are evaluated:

1. Maintain one class (current approach), or
2. Separate classes for each large-volume customer.

Evaluation of Alternatives

Attachment C presents the weighted evaluations of the alternatives.

Implementation Criteria

The administrative burden of the one-class approach is somewhat less than separating the classes for each large-volume customer. Considering the small size of the large-volume class, this administrative burden is likely to be quite small. The alternatives did not vary for the other implementation criteria.

Equity Criteria

Attachment D presents a preliminary calculation of peak-month peaking factors for AWU's current large-volume customers. Although the calculations are preliminary, the results of the analyses indicate that AWU's large-volume customers differ in their monthly peak demands. This suggests that disaggregating the class would improve intraclass equity. For industry standards, although disaggregating large-volume customers occurs, it is certainly less common. The alternatives did not vary for the other equity criteria.

Customer Criteria

The alternatives did not vary for the customer criteria.

Conservation Criteria

Disaggregating large-volume customers may increase water conservation since these customers can directly benefit from reducing the peak-demands placed on the system. For that reason, the separate customer class option was preferred for peak-season savings, peak-day savings, and sustainability.

Financial Criteria

The alternatives did not vary for the financial criteria.

Preliminary Findings and Recommendations

The consulting team recommends AWU disaggregate its large-volume customers and establish individual rates for each customer based on that customer's estimated water and wastewater usage characteristics.

Issue 2: Should the threshold for inclusion in the large-volume class be adjusted?

Overview of the Issue

AWU historically has placed customers with demands exceeding 85 million gallons per year in its large-volume class. This threshold was set to balance the administrative burden of managing a large-volume class with the relatively few customers that use water for significant industrial processes. Generally, large industrial customers have lower peaking factors, and therefore, a lower cost of service. The large-volume threshold was set, in part, to identify these types of customers. As industries have implemented conservation measures, concerns have been raised regarding their abilities to meet the threshold requirements with diminished water demands.

Description of Alternatives

Three alternatives are evaluated:

1. Maintain 85 MG per year as the threshold (current approach), or
2. Increase the threshold to 100 MG per year, or
3. Reduce the threshold to 50 MG per year.

In 2006, AWU had approximately 14 accounts with water purchases exceeding 30 MG.[7] The annual water purchases of these 14 largest accounts ranged from almost 31 MG to over 1,877 MG. Attachment E includes Figure E-1 that depicts the cumulative distribution of accounts with consumption exceeding 30 MG per year in 2006. The green vertical line in Figure E-1 is AWU's current threshold of 85 MG per year. Table E-1 presents the actual billing records for 2003 through 2006.

Evaluation of Alternatives

Our preliminary analyses indicate that all of the customers who have accounts exceeding 30 million gallons a year are current large-volume customers.[8] This suggests that changing the threshold may not have a significant impact on AWU.

Implementation Criteria

Reducing the threshold from its current level may affect administrative burden especially if the utility chooses to create separate classes for its large-volume customers. If the threshold is too low, additional customers may qualify and that would require the creation of additional customer classes. This is an unlikely outcome. This possibility may also adversely affect the policy durability criterion. The alternatives did not vary for the other implementation criteria.

Equity Criteria

The alternatives did not vary for the equity criteria.

Customer Criteria

The alternatives did not vary for the customer criteria.

[7] This excludes AWU's wholesale customers. Large-volume customers typically have multiple accounts. Of the 14 accounts identified, all were those of large-volume customers.
[8] Our findings are preliminary an additional data will be included in our analyses when available. We will revise this issue paper if the new data have a material impact on our assumptions.

Conservation Criteria

Reducing the threshold may have a small conservation benefit if this results in more customers being placed within their own customer class. Placing customers within their own class may provide a greater incentive to manage their peak demands.

Financial Criteria

The alternatives did not vary for the financial criteria.

Preliminary Findings and Recommendations

The consulting team recommends AWU maintain its current thresholds. If AWU determines that large-volume customers should be treated as individual customer classes, the consulting team suggests aggregating the water purchases for each location for the determination of the individual rate.

Issue 3: Should an irrigation class be created?

Overview of the Issue

AWU currently uses increasing block rates to send conservation pricing signals to its single-family residential customers. The highest block rates reflect the cost of providing water during peak periods. Much of this water is used for lawn irrigation and other outdoor uses. AWU uses seasonal rates to provide a conservation price incentive for its other customers.

The City's Water Conservation Task Force has identified water conservation potential from changes in water rate design. Some of the proposals are dependent on implementing a new utility billing system that will support more complex water rate designs. In the interim, however, the Water Conservation Task Force has identified changes in the water rates applied to irrigation accounts as a potential source of water savings. Assessing water rates for irrigation accounts will require the creation of an irrigation customer class.

Description of Alternatives

Two alternatives are evaluated:

1. Do not implement an irrigation class (current approach), or
2. Implement an irrigation class.

Evaluation of Alternatives

Implementation Criteria

The administrative burden of maintaining no irrigation class is less than introducing a new class. The primary challenge for implementing the new customer class will be developing the necessary data, programming the utility billing system, and answering customer questions about the new classifications. The data development efforts should not be significant since the irrigation status of an account is incorporated in the current utility billing system for wastewater bills. Given the extensive efforts of the Water Conservation Task Force, a separate irrigation class is likely more acceptable to the public and elected officials. The risk of implementation is higher for the new irrigation class. Neither alternative is highly rated for policy durability since the constraints of the current utility billing system will likely be removed within a few years. However, moving forward on developing an irrigation class may contribute to the ultimate resolution of this issue. The alternatives did not vary for the other implementation criteria.

Equity Criteria

Many of the equity criteria ultimately will depend on the nature of the rates developed for the proposed irrigation class. It is likely that interclass equity will remain unchanged since the cost of service for the new irrigation class can be determined separately. The impact on intraclass equity is particularly difficult to anticipate. Generally, adding customer classes improves intraclass equity as the classes become relatively more homogenous. In this case, however, an offsetting diminishment of intraclass equity may result since some customers that use water for irrigation purposes will not have an irrigation meter. These customers will remain in their original customer classes and benefit from the reduction in the peak-related costs of their class while maintaining the use of irrigation water. This phenomenon may reduce intraclass equity. The alternatives did not vary for the other equity criteria.

Customer Criteria

The only significant impact on customers will be the possibility of rate shock for customers with irrigation meters if a new irrigation rate is implemented. The alternatives did not vary for the other customer criteria.

Conservation Criteria

Creating an irrigation class may increase water conservation since irrigation customers will have an enhanced incentive to use outdoor water wisely. For that reason, creating an irrigation class was preferred for peak-season savings, peak-day savings, and sustainability.

Financial Criteria

Depending on the ultimate rate design selected for the proposed irrigation class, introducing this class may reduce the stability of AWU’s revenues. This reduction results from recovering more revenues (assuming higher rates for the irrigation class) from sales of water that may be more affected by weather conditions. The alternatives did not vary for the other financial criteria.

Preliminary Findings and Recommendations

The consulting team recommends AWU not create an irrigation class at this time. Rather, we recommend that AWU consider using rate design alternatives within the existing customer classes until a new utility billing system is in place. Many of the objectives of creating the irrigation class can be addressed through the rate design process. In addition, this approach will allow AWU to be more deliberate in its future policy development on irrigation water use without the implementing alternatives that will likely be significantly revised within a few years.

A2908-083

City of Austin
Issue Paper #4: Customer Classifications

SECTION

A

Preliminary Analysis of Peaking Factors

Table A-1
AWU Water Cost of Service
Development of Peaking Factors (2003-2006)
Summary of Average Monthly Consumption by Class (Kgal)

Customer Class	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Inside City Residential	1,045,593	884,006	901,160	1,074,953	1,227,047	1,477,933	1,635,379	1,774,177	1,850,433	1,471,084	1,176,423	1,143,647	15,661,834
Inside City Multi-Family	642,119	582,023	608,684	622,299	637,151	715,354	756,356	764,687	816,338	752,122	683,254	699,231	8,279,617
Inside City Commercial	789,758	715,560	722,528	802,928	882,277	1,056,399	1,168,991	1,232,560	1,324,866	1,151,284	1,006,423	924,386	11,777,960
Inside City Industrial	241,846	214,275	218,131	230,093	227,889	248,441	262,346	246,033	268,094	257,759	239,351	254,425	2,908,684
Inside City Golf Courses	2,779	2,819	2,421	3,566	7,063	10,359	10,512	11,886	13,756	8,019	7,636	5,722	86,537
Utility	6,473	5,910	7,143	7,349	5,874	6,726	6,703	7,528	8,438	6,618	7,098	7,198	83,059
Outside City Residential	88,793	73,384	71,637	86,129	101,825	123,808	137,113	149,896	153,857	121,235	95,041	93,135	1,295,853
Outside City Multi-Family	28,868	25,401	25,369	27,944	30,525	34,723	37,194	40,089	40,054	35,808	33,241	32,055	391,271
Outside City Commercial	53,752	43,122	43,870	50,952	48,003	68,182	81,439	80,420	95,416	74,750	57,613	50,251	747,770
Outside City Golf Course	105	64	62	69	75	2,061	423	107	117	120	89	87	3,379
Anderson Mill	37,911	34,933	33,436	35,150	38,354	41,425	46,118	52,434	53,984	53,807	41,624	40,823	509,999
Creedmore-Maha	2,725	2,847	2,432	2,541	2,669	3,186	3,398	4,000	4,292	3,498	3,243	3,513	38,344
High Valley	520	463	440	555	497	552	616	665	659	639	557	594	6,754
Lost Creek	18,409	17,213	14,352	17,195	23,163	27,343	31,279	35,180	39,076	32,321	26,263	23,597	305,389
Manor, City of (1)	3,726	81	397	631	368	48	0	0	60	10,446	7,927	4,069	27,753
Manville WSC	4,896	4,272	3,606	4,763	5,465	6,168	7,976	8,077	9,949	9,191	7,601	6,754	78,716
Marsha Water	779	722	705	768	811	827	909	1,020	1,011	976	751	788	10,067
Nighthawk	818	744	710	782	836	880	979	981	1,013	980	792	802	10,318
North Austin MUD	23,258	23,865	21,863	22,816	26,951	31,221	36,580	43,517	44,434	41,515	31,257	29,244	376,522
Northtown MUD	9,063	8,587	8,159	9,288	10,890	12,073	14,011	15,122	15,679	14,515	12,299	12,169	141,856
Rivercrest	7,054	5,824	4,385	5,289	7,806	8,412	9,244	11,546	11,856	11,172	9,120	7,974	99,682
Rollingwood	8,159	6,766	5,508	6,647	10,208	12,498	14,932	14,624	18,938	15,825	11,454	9,713	135,270
Shady Hollow	14,133	13,400	11,467	13,814	20,905	21,708	26,219	29,403	34,589	27,819	19,851	17,991	251,300
Sunset Valley MUD	5,403	5,082	4,842	5,149	6,270	8,075	9,991	11,114	11,138	10,640	8,158	7,240	93,099
Water District 10	53,596	51,735	43,557	44,301	70,403	77,484	88,903	102,222	113,030	97,897	77,043	72,073	892,243
Wells Branch MUD	39,478	35,563	33,065	38,532	40,671	44,497	54,390	55,404	56,246	51,734	43,764	41,390	534,733
Windermere	915	1,023	552	236	269	443	1,247	3,619	2,593	8,813	2,539	1,269	23,518
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Totals	3,130,928	2,759,681	2,790,482	3,114,739	3,434,265	4,040,824	4,443,246	4,696,310	4,989,914	4,270,586	3,610,411	3,490,139	44,771,526

(1) City of Manor data includes consumption from October 2006 - September 2007.

Table A-2
AWU Water Cost of Service
Development of Peaking Factors (2003-2006)
Summary of Average Daily Consumption in Kgal per Day

Customer Class	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average	Peak Season	Peak Month
Number of Days in Month	31	28	31	30	31	30	31	31	30	31	30	31	365		
Peak-Season	0	0	0	0	0	0	1	1	1	1	0	0			
Inside City Residential	8,432.2	7,892.9	7,267.4	8,957.9	9,895.5	12,316.1	13,188.5	14,307.9	15,420.3	11,863.6	9,803.5	9,223.0	10,714.1	13,695.1	15,420.3
Inside City Multi-Family	5,178.4	5,196.6	4,908.7	5,185.8	5,138.3	5,961.3	6,099.6	6,166.8	6,802.8	6,065.5	5,693.8	5,639.0	5,669.7	6,283.7	6,802.8
Inside City Commercial	6,369.0	6,388.9	5,826.8	6,691.1	7,115.1	8,803.3	9,427.3	9,940.0	11,040.5	9,284.5	8,386.9	7,454.7	8,060.7	9,923.1	11,040.5
Inside City Industrial	1,950.4	1,913.2	1,759.1	1,917.4	1,837.8	2,070.3	2,115.7	1,984.1	2,234.1	2,078.7	1,994.6	2,051.8	1,992.3	2,103.2	2,234.1
Inside City Golf Courses	22.4	25.2	19.5	29.7	57.0	86.3	84.8	95.9	114.6	64.7	63.6	46.1	59.2	90.0	114.6
Utility	52.2	52.8	57.6	61.2	47.4	56.1	54.1	60.7	70.3	53.4	59.2	58.1	56.9	59.6	70.3
Outside City Residential	716.1	655.2	577.7	717.7	821.2	1,031.7	1,105.7	1,208.8	1,282.1	977.7	792.0	751.1	886.4	1,143.6	1,282.1
Outside City Multi-Family	232.8	226.8	204.6	232.9	246.2	289.4	300.0	323.3	333.8	288.8	277.0	258.5	267.8	311.5	333.8
Outside City Commercial	433.5	385.0	353.8	424.6	387.1	568.2	656.8	648.6	795.1	602.8	480.1	405.2	511.7	675.8	795.1
Outside City Golf Course	0.8	0.6	0.5	0.6	0.6	17.2	3.4	0.9	1.0	1.0	0.7	0.7	2.3	1.6	17.2
Anderson Mill	305.7	311.9	269.6	292.9	309.3	345.2	371.9	422.9	449.9	433.9	346.9	329.2	349.1	419.6	449.9
Creedmore-Maha	22.0	25.4	19.6	21.2	21.5	26.6	27.4	32.3	35.8	28.2	27.0	28.3	26.3	30.9	35.8
High Valley	4.2	4.1	3.5	4.6	4.0	4.6	5.0	5.4	5.5	5.1	4.6	4.8	4.6	5.2	5.5
Lost Creek	148.5	153.7	115.7	143.3	186.8	227.9	252.2	283.7	325.6	260.7	218.9	190.3	208.9	280.6	325.6
Manor, City of	30.0	0.7	3.2	5.3	3.0	0.4	0.0	0.0	0.5	84.2	66.1	32.8	18.9	21.2	84.2
Manville WSC	39.5	38.1	29.1	39.7	44.1	51.4	64.3	65.1	82.9	74.1	63.3	54.5	53.8	71.6	82.9
Marsha Water	6.3	6.4	5.7	6.4	6.5	6.9	7.3	8.2	8.4	7.9	6.3	6.4	6.9	8.0	8.4
Nighthawk	6.6	6.6	5.7	6.5	6.7	7.3	7.9	7.9	8.4	7.9	6.6	6.5	7.1	8.0	8.4
North Austin MUD	187.6	213.1	176.3	190.1	217.3	260.2	295.0	350.9	370.3	334.8	260.5	235.8	257.7	337.8	370.3
Northtown MUD	73.1	76.7	65.8	77.4	87.8	100.6	113.0	122.0	130.7	117.1	102.5	98.1	97.1	120.7	130.7
Rivercrest	56.9	52.0	35.4	44.1	63.0	70.1	74.5	93.1	98.8	90.1	76.0	64.3	68.2	89.1	98.8
Rollingwood	65.8	60.4	44.4	55.4	82.3	104.1	120.4	117.9	157.8	127.6	95.5	78.3	92.5	130.9	157.8
Shady Hollow	114.0	119.6	92.5	115.1	168.6	180.9	211.4	237.1	288.2	224.3	165.4	145.1	171.9	240.3	288.2
Sunset Valley MUD	43.6	45.4	39.0	42.9	50.6	67.3	80.6	89.6	92.8	85.8	68.0	58.4	63.7	87.2	92.8
Water District 10	432.2	461.9	351.3	369.2	567.8	645.7	717.0	824.4	941.9	789.5	642.0	581.2	610.3	818.2	941.9
Wells Branch MUD	318.4	317.5	266.7	321.1	328.0	370.8	438.6	446.8	468.7	417.2	364.7	333.8	366.0	442.8	468.7
Windermere	7.4	9.1	4.5	2.0	2.2	3.7	10.1	29.2	21.6	71.1	21.2	10.2	16.0	33.0	71.1
Totals	25,249.4	24,640.0	22,503.9	25,956.2	27,695.7	33,673.5	35,832.6	37,873.5	41,582.6	34,440.2	30,086.8	28,146.3	30,640.1	37,432.2	41,732.0

Table A-3
AWU Water Cost of Service
Development of Peaking Factors (2003-2006)
Estimation of Peaking Factors by Class by Prorating System Peaking Factors

Customer Class	Avg. Day Demand (MGD)	Peak Season Cons. (MGD)	Peak Month Cons. (MGD)	Estimated Peak-Season Factor	Estimated Peak-Day Factor	Peak-Day Demand	Estimated Peak-Hour Factor	Peak-Hour Demand
Inside City Residential	10.71	13.70	15.42	1.28	1.64	17.54	2.54	27.18
Inside City Multi-Family	5.67	6.28	6.80	1.11	1.36	7.74	2.11	11.99
Inside City Commercial	8.06	9.92	11.04	1.23	1.56	12.56	2.41	19.46
Inside City Industrial	1.99	2.10	2.23	1.06	1.28	2.54	1.98	3.94
Inside City Golf Courses	0.06	0.09	0.11	1.52	2.20	0.13	3.42	0.20
Utility	0.06	0.06	0.07	1.05	1.41	0.08	2.18	0.12
Outside City Residential	0.89	1.14	1.28	1.29	1.64	1.46	2.55	2.26
Outside City Multi-Family	0.27	0.31	0.33	1.16	1.42	0.38	2.20	0.59
Outside City Commercial	0.51	0.68	0.80	1.32	1.77	0.90	2.74	1.40
Outside City Golf Course	0.00	0.00	0.02	0.67	8.39	0.02	13.00	0.03
Anderson Mill	0.35	0.42	0.45	1.20	1.47	0.51	2.27	0.79
Creedmore-Maha	0.03	0.03	0.04	1.18	1.55	0.04	2.40	0.06
High Valley	0.00	0.01	0.01	1.13	1.35	0.01	2.09	0.01
Lost Creek	0.21	0.28	0.33	1.34	1.77	0.37	2.75	0.57
Manor, City of	0.02	0.02	0.08	1.12	5.08	0.10	7.88	0.15
Manville WSC	0.05	0.07	0.08	1.33	1.75	0.09	2.71	0.15
Marsha Water	0.01	0.01	0.01	1.16	1.39	0.01	2.15	0.01
Nighthawk	0.01	0.01	0.01	1.14	1.36	0.01	2.11	0.01
North Austin MUD	0.26	0.34	0.37	1.31	1.63	0.42	2.53	0.65
Northtown MUD	0.10	0.12	0.13	1.24	1.53	0.15	2.37	0.23
Rivercrest	0.07	0.09	0.10	1.31	1.65	0.11	2.55	0.17
Rollingwood	0.09	0.13	0.16	1.42	1.94	0.18	3.01	0.28
Shady Hollow	0.17	0.24	0.29	1.40	1.91	0.33	2.96	0.51
Sunset Valley MUD	0.06	0.09	0.09	1.37	1.66	0.11	2.57	0.16
Water District 10	0.61	0.82	0.94	1.34	1.76	1.07	2.72	1.66
Wells Branch MUD	0.37	0.44	0.47	1.21	1.46	0.53	2.26	0.83
Windermere	0.02	0.03	0.07	2.06	5.05	0.08	7.82	0.13
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System Totals	30.64	37.43	41.73	1.22	1.55	47.46	2.40	73.55

Table A-4
AWU Water Cost of Service
Development of Peaking Factors (2003-2006)
Peaking Factors

Customer Class	Estimated Peak-Season Factor	Estimated Peak-Day Factor	Estimated Peak-Hour Factor
Inside City Residential	1.28	1.64	2.54
Inside City Multi-Family	1.11	1.36	2.11
Inside City Commercial	1.23	1.56	2.41
Inside City Industrial	1.06	1.28	1.98
Inside City Golf Courses	1.52	2.20	3.42
Utility	1.05	1.41	2.18
Outside City Residential	1.29	1.64	2.55
Outside City Multi-Family	1.16	1.42	2.20
Outside City Commercial	1.32	1.77	2.74
Outside City Golf Course	0.67	8.39	13.00
Anderson Mill	1.20	1.47	2.27
Creedmore-Maha	1.18	1.55	2.40
High Valley	1.13	1.35	2.09
Lost Creek	1.34	1.77	2.75
Manor, City of	1.12	5.08	7.88
Manville WSC	1.33	1.75	2.71
Marsha Water	1.16	1.39	2.15
Nighthawk	1.14	1.36	2.11
North Austin MUD	1.31	1.63	2.53
Northtown MUD	1.24	1.53	2.37
Rivercrest	1.31	1.65	2.55
Rollingwood	1.42	1.94	3.01
Shady Hollow	1.40	1.91	2.96
Sunset Valley MUD	1.37	1.66	2.57
Water District 10	1.34	1.76	2.72
Wells Branch MUD	1.21	1.46	2.26
Windermere	2.06	5.05	7.82
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System-Wide Peaking Factors	1.22	1.55	2.40

City of Austin
Issue Paper #4: Customer Classifications

SECTION

B

Example of Wastewater Mass Balancing Analysis

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Wastewater System and Industrial Customer Flows and Strengths
October 1, 2006 to September 30, 2007

Treatment Plant	Inflow (MG)	BOD Lbs	BOD mg/L	TSS Lbs	TSS mg/L
Walnut	20,795	23,573,719	136	34,652,639	200
SAR	15,845	30,578,479	231	40,206,260	304
Total System	36,641	54,152,198	177	74,858,898	245
Industrial Customers					
Freescale Semiconductor, Inc.	588.5	446,864	91	63,838	13
Freescale Semiconductor, Inc.	323.2	318,282	118	234,665	87
Samsung Austin Semiconductor	464.6	279,125	72	116,302	30
Spansion LLC	607.9	106,520	21	65,941	13
University of Texas	0.9	604	80	785	104
University of Texas	26.8	8,060	36	3,582	16
Total Industrial Customers	2,012	1,159,455	69	485,114	29
System Less Industrial Customers	34,629	52,992,743	183	74,373,785	258

City of Austin
Issue Paper #4: Customer Classifications

SECTION

C

Evaluation of Alternatives

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Evaluations Based on Average Ratings
Disaggregate Industrial Class

Alternatives	Implementation: Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility	Policy Durability
One Class (Current)	■■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■
Separate Classes	■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■■
Ratings	■■■■	■■■■■	■■■■■	■■■■	■■■■■	■■■■■

Alternatives	Equity: Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards	
One Class (Current)	■■■■■	■■■	■■■■■	■■■■■	■■■■■■	
Separate Classes	■■■■■	■■■■■■■	■■■■■	■■■■■	■■■■	
Ratings	■■■■■	■■■■■	■■■■	■■■■	■■■■	

Alternatives	Customer: Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill		
One Class (Current)	■■■■■	■■■■■	■■■■■	■■■■■		
Separate Classes	■■■■■	■■■■■	■■■■■	■■■■■		
Ratings	■■■■■■	■■■■	■■■■■	■■■■		

Alternatives	Conservation: Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability		
One Class (Current)	■■■■■	■■■■	■■■■	■■■■		
Separate Classes	■■■■■	■■■■■■■	■■■■■■■	■■■■■■■		
Ratings	■■■■■	■■■■	■■■■■■	■■■■■■		

Alternatives	Financial: Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk	
One Class (Current)	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Separate Classes	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Ratings	■■■■■■■	■■■■■■	■■■■■■	■■■■■■	■■■■■■	

Alternatives	Weighted Average Score
One Class (Current)	■■■■■■■■■■
Separate Classes	■■■■■■■■■■

Average Ratings

Disaggregate Industrial Class

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
One Class (Current)	5.9	4.9	4.9	4.9	4.9	4.9
Separate Classes	3.9	4.9	4.9	4.9	4.9	5.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
One Class (Current)	4.9	3.0	4.9	4.9	5.9	
Separate Classes	4.9	6.9	4.9	4.9	3.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
One Class (Current)	4.9	4.9	4.9	4.9		
Separate Classes	4.9	4.9	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
One Class (Current)	4.9	3.9	3.9	3.9		
Separate Classes	4.9	6.9	6.9	6.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
One Class (Current)	4.9	4.9	4.9	4.9	4.9	
Separate Classes	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
One Class (Current)	573
Separate Classes	628

Evaluations Based on Average Ratings
Threshold for Inclusion in Industrial Class

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
85 MG per Year (current)						
100 MG per Year						
50 MG per Year						
Ratings						

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
85 MG per Year (current)						
100 MG per Year						
50 MG per Year						
Ratings						

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
85 MG per Year (current)						
100 MG per Year						
50 MG per Year						
Ratings						

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
85 MG per Year (current)						
100 MG per Year						
50 MG per Year						
Ratings						

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
85 MG per Year (current)						
100 MG per Year						
50 MG per Year						
Ratings						

Alternatives	**Weighted Average Score**
85 MG per Year (current)	
100 MG per Year	
50 MG per Year	

Average Ratings
Threshold for Inclusion in Industrial Class

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
85 MG per Year (current)	5.9	4.9	4.9	4.9	4.9	4.9
100 MG per Year	5.9	4.9	4.9	4.9	4.9	4.9
50 MG per Year	4.9	4.9	4.9	4.9	4.9	4.0
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
85 MG per Year (current)	4.9	4.9	4.9	4.9	4.9	
100 MG per Year	4.9	4.9	4.9	4.9	4.9	
50 MG per Year	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
85 MG per Year (current)	4.9	4.9	4.9	4.9		
100 MG per Year	4.9	4.9	4.9	4.9		
50 MG per Year	4.9	4.9	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
85 MG per Year (current)	4.9	4.9	4.9	4.9		
100 MG per Year	4.9	4.9	4.9	4.9		
50 MG per Year	4.9	5.9	5.9	5.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
85 MG per Year (current)	4.9	4.9	4.9	4.9	4.9	
100 MG per Year	4.9	4.9	4.9	4.9	4.9	
50 MG per Year	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
85 MG per Year (current)	597
100 MG per Year	597
50 MG per Year	605

Evaluations Based on Average Ratings
Creation of an Irrigation Class

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
No Irrigation Class (Current)	■■■■■■	■■■■■	■■■■	■■■■■■	■■■■■	■■■■
Implement Irrigation Class	■■■■	■■■■■	■■■■■■■	■■■■	■■■■■	■■■■■
Ratings	■■■■	■■■■■	■■■■■	■■■■	■■■■■	■■■■■

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
No Irrigation Class (Current)	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Implement Irrigation Class	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	
Ratings	■■■■■	■■■■■	■■■■	■■■■	■■■■	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
No Irrigation Class (Current)	■■■■■	■■■■■	■■■■■■■	■■■■■		
Implement Irrigation Class	■■■■■	■■■■■	■■■	■■■■■		
Ratings	■■■■■■	■■■■	■■■■■	■■■■		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
No Irrigation Class (Current)	■■■■■	■■■■	■■■■	■■■■		
Implement Irrigation Class	■■■■■	■■■■■■■	■■■■■■■	■■■■■■■		
Ratings	■■■■■	■■■■	■■■■■■	■■■■■■		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
No Irrigation Class (Current)	■■■■■	■■■■■■■	■■■■■	■■■■■	■■■■■■■	
Implement Irrigation Class	■■■■■	■■■■	■■■■■	■■■■■	■■■■	
Ratings	■■■■■■■	■■■■■■	■■■■■■	■■■■■■	■■■■■■	

Alternatives	**Weighted Average Score**
No Irrigation Class (Current)	■■■■■■■■■■
Implement Irrigation Class	■■■■■■■■■■

Average Ratings
Creation of an Irrigation Class

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
No Irrigation Class (Current)	5.9	4.9	3.9	5.9	4.9	3.9
Implement Irrigation Class	3.9	4.9	6.9	3.9	4.9	4.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
No Irrigation Class (Current)	4.9	4.9	4.9	4.9	4.9	
Implement Irrigation Class	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
No Irrigation Class (Current)	4.9	4.9	6.9	4.9		
Implement Irrigation Class	4.9	4.9	2.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
No Irrigation Class (Current)	4.9	3.9	3.9	3.9		
Implement Irrigation Class	4.9	6.9	6.9	6.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
No Irrigation Class (Current)	4.9	6.9	4.9	4.9	6.9	
Implement Irrigation Class	4.9	3.9	4.9	4.9	3.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
No Irrigation Class (Current)	603
Implement Irrigation Class	600

City of Austin
Issue Paper #4: Customer Classifications

SECTION

D

Monthly Demands of Large-Volume Customers

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Summary of Peaking Month to Average Month Factors by Industrial Customer

Historical Customers

Industrial Customers	2003	2004	2005	2006	Average Peak Factor
Applied Materials	1.54	1.34	2.20	1.56	1.66
Freescale	1.24	1.15	1.11	1.82	1.33
Samsung Austin Semiconduct	1.18	1.13	1.31	1.22	1.21
Sematech	1.12	1.14	1.23	1.46	1.24
Spansion	1.11	1.23	1.18	1.18	1.17
University Of Texas	1.33	1.26	1.34	1.53	1.37
Multilayer Tek L.P.	2.03	5.09	2.25	1.91	2.82
Hospira Inc	2.72	2.07	1.40	1.35	1.88
Tyco	1.25	1.24			1.25
	-----------------	-----------------	-----------------	-----------------	-----------------
Average	1.50	1.74	1.50	1.51	1.55
Standard Deviation	0.539	1.291	0.455	0.264	0.533

Existing Customers

Industrial Customers	2003	2004	2005	2006	Average Peak Factor
Applied Materials	1.54	1.34	2.20	1.56	1.66
Freescale	1.24	1.15	1.11	1.82	1.33
Samsung Austin Semiconduct	1.18	1.13	1.31	1.22	1.21
Sematech	1.12	1.14	1.23	1.46	1.24
Spansion	1.11	1.23	1.18	1.18	1.17
University Of Texas	1.33	1.26	1.34	1.53	1.37
Multilayer Tek L.P.					
Hospira Inc	2.72	2.07	1.40	1.35	1.88
Tyco					
	-----------------	-----------------	-----------------	-----------------	-----------------
Average	1.46	1.33	1.39	1.45	1.41
Standard Deviation	0.573	0.333	0.368	0.222	0.265

City of Austin
Issue Paper #4: Customer Classifications

SECTION

E

Water Sales to Large-Volume Customers

REDOAK CONSULTING
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Figure E-1

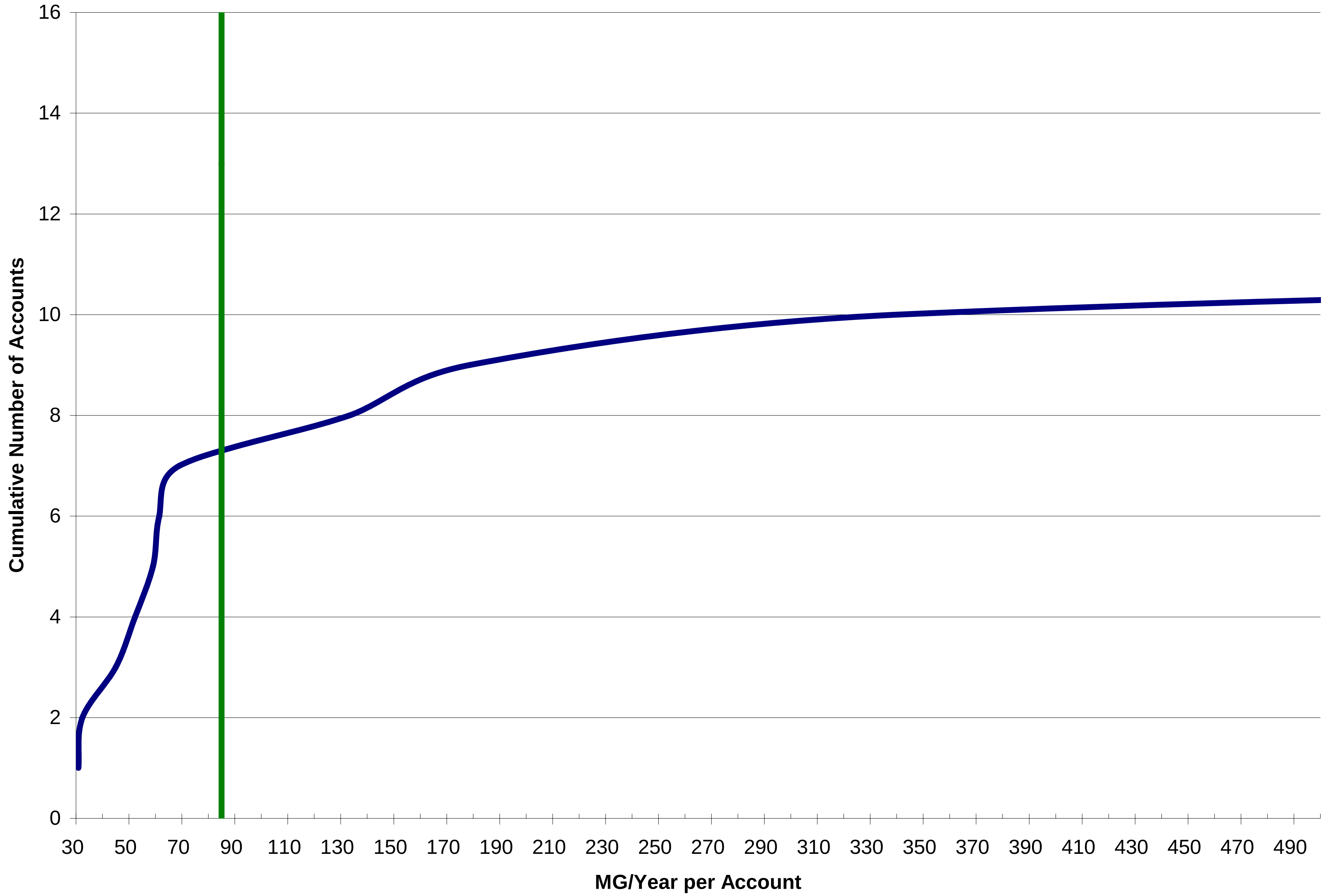
16
14
12
10
8
6
4
2
0
Cumulative Number of Accounts
30
50
70
90
110
130
150
170
190
210
230
250
270
290
310
330
350
370
390
410
430
450
470
490
MG/Year per Account

Table E-1
Consumption by Accounts Exceeding 30 MG per Year

Name	Acct	Year	Annual Sales (MG)
HOSPIRA INC	5349380	2006	30,906
SPANSION	399665	2006	32,374
UNIVERSITY OF TEXAS	538297	2003	32,523
APPLIED MATERIALS	256619	2005	33,713
SPANSION	399665	2005	34,026
APPLIED MATERIALS	4228955	2005	41,066
UNIVERSITY OF TEXAS	844845	2003	44,502
UNIVERSITY OF TEXAS	844845	2004	44,553
TYCO	4554746	2006	45,040
UNIVERSITY OF TEXAS	538297	2005	47,120
APPLIED MATERIALS	4228955	2006	52,273
UNIVERSITY OF TEXAS	844845	2005	54,853
UNIVERSITY OF TEXAS	844845	2006	59,103
UNIVERSITY OF TEXAS	538297	2006	61,500
UNIVERSITY OF TEXAS	597820	2006	68,965
UNIVERSITY OF TEXAS	597820	2004	70,504
UNIVERSITY OF TEXAS	597820	2005	78,020
UNIVERSITY OF TEXAS	597820	2003	79,295
HOSPIRA INC	589815	2003	83,499
HOSPIRA INC	589815	2004	93,409
HOSPIRA INC	589815	2005	97,138
TYCO	4554746	2005	99,173
FREESCALE	15137	2003	127,404
UNIVERSITY OF TEXAS	768753	2006	133,390
TYCO	4554746	2003	134,954
UNIVERSITY OF TEXAS	768753	2005	137,569
FREESCALE	588235	2004	153,376
TYCO	4554746	2004	153,706
UNIVERSITY OF TEXAS	768753	2004	154,639
UNIVERSITY OF TEXAS	768753	2003	155,015
SEMATECH	360836	2006	178,822
SEMATECH	360836	2003	195,718
SEMATECH	360836	2004	203,396
SEMATECH	360836	2005	206,640
FREESCALE	4910316	2004	219,708
FREESCALE	4910316	2006	339,474
FREESCALE	4910316	2005	348,400
FREESCALE	588235	2003	375,409
UNIVERSITY OF TEXAS	561507	2005	895,365
UNIVERSITY OF TEXAS	561507	2006	962,307
SAMSUNG AUSTIN SEMICONDUCT	171562	2003	963,564
SAMSUNG AUSTIN SEMICONDUCT	171562	2004	1,040,862
SAMSUNG AUSTIN SEMICONDUCT	171562	2005	1,057,598
SPANSION	281322	2006	1,116,734
SPANSION	281322	2005	1,186,724
SPANSION	281322	2004	1,299,924
SAMSUNG AUSTIN SEMICONDUCT	171562	2006	1,397,454
FREESCALE	4910303	2004	1,469,740
SPANSION	281322	2003	1,534,934
UNIVERSITY OF TEXAS	561507	2004	1,670,427
FREESCALE	4910303	2006	1,877,140
FREESCALE	4910303	2005	2,005,888
UNIVERSITY OF TEXAS	561507	2003	2,041,587

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REDOAK CONSULTING
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Issue Paper #5
Rate Design

Subject: Rate Design

Date: February 28, 2008

Introduction

One of the final steps in the rate setting process is the development of a rate structure or structures that meets the objectives of the Austin Water Utility (AWU) and the community it serves. Utilities throughout the industry have adopted and use several rate structures. Each of these structures varies in its ability to meet the objectives of AWU and its citizens. Regardless, an important consideration in designing rates is to ensure that the rate structure recovers the cost of service while meeting the utility's objectives.

As with prior issue papers, this issue paper examines the options available to AWU and evaluates each option's ability to meet the criteria established by the executive team. This issue paper describes the rate design process, rate components, and alternative rate structures. Also, specific policy questions are addressed.

Overview of Rate Design Process

Rate Design Goals and Objectives

One of the first requirements in developing a rate design is to understand the utility's goals and objectives. The City Council identified water conservation as a priority when passing its resolution on August 24, 2006 with a goal of reducing peak-day water use by 1 percent per year for 10 years. The City's Water Conservation Task Force developed a summary of proposed strategies to meet this goal, some of which can be addressed through the rate design process. These strategies included:

- Establishing an additional residential tier for water use exceeding 25,000 gallons per month;
- Establishing commercial irrigation rates comparable to the highest residential tiers;
- Developing water budget rates for commercial customers; and
- Implementing conservation rate structures for wholesale customers.

Other objectives considered in rate design may include:

- Ensuring the equitability of the rates so that customers with higher use during the utility's peak season pay a proportionate share of their costs;
- Mitigating the impact that weather-related fluctuations in revenues have on the utility's financial health;
- Maintaining the affordability of water for customers with limited ability to pay;

- Providing a meaningful bill with a rate structure that is understandable to the customer; and
- Maintaining the overall acceptance of the rate structure for the community.

Many of these objectives fall outside the technical arena and are necessarily public policy questions that must be answered by community leaders. This issue paper discusses the recommendations of the Water Conservation Task Force.

Rate Components

There are two basic components found in most rate structures: a fixed charge and a variable charge. These components are found in both water and wastewater rate structures. The difference between the two components and their use in rates is described below followed by a discussion of the alternative structures currently in use.

Fixed Charges

The AWWA M1 Manual and WEF Manual of Practice No. 27 categorize fixed charges into service or customer charges, meter charges, and minimum charges. These are defined as follows:

1. Service or customer charge – Typically recovers meter reading, billing, and other customer-related costs that can be applied equally to all customers and are not a function of use.

2. Meter charge – A fixed fee that increases with water meter size.

3. Minimum charge – A fixed fee that includes some allotment of water or wastewater use.

Service or customer charges are relatively easy to calculate and therefore easy to explain to customers. These charges recover the costs that a utility incurs to measure water use, perform the billing process, and provide customer services, etc. These costs generally do not vary with the amount of water consumed; rather these costs tend to vary with the number of bills processed.

Meter charges require allocating costs based on meter size, and are slightly more complex. Even though wastewater is normally not metered directly, meter charges can be used in wastewater rate design. Some water utilities share the cost of meter reading and maintenance with the customer’s wastewater provider. This sharing may be appropriate in circumstances where wastewater bills are based in part on water consumption records derived from water meters.

Additionally, some utilities include other components in the meter charges such as:

1. Fire charges. Fire charges can be allocated to customers in whole or part based on meter sizes. These charges may be recovered in relation to the size of the water meter. In such circumstances, the relative size of the charge to meters of different sizes may be different from those typically used for the meter charge.

2. Demand charges. Demand charges normally recover a portion of the revenue requirement of the utility to mitigate the impact that fluctuating revenues may have on the financial health of the utility. In some cases, utilities may assess these as availability of service charges.

A key element in developing a meter charge is assigning costs that vary with the size of the meter.

Minimum charges include some allotment of use and are used in combination with service and meter charges. As a result, when minimum charges are involved, they generally result in higher fixed fees. Like a demand charge, a minimum charge increases revenue stability by increasing the utility's revenues that are fixed and do not vary regardless of sales. Conversely, a minimum charge may result in an inequity to a customer whose use falls below the minimum. In fact, for these customers a minimum charge may be a disincentive to conserve. By analyzing customer usage, the trade-offs associated with the minimum charge can be analyzed and weighed against the evaluation criteria.

Variable Charges

Water Rate Structures

Variable charges are generally based on a customer's use. For water, a customer's use is normally measured by a water meter installed at, or near, the customer's premises. For wastewater, however, a customer's use is often estimated from the customers metered water use. Generally, the utility uses a method of estimating the amount of water that returns to the wastewater system. These estimates are often actual or estimated measures of indoor water use.

There are four commonly used rate structures that are defined in the AWWA M1 Manual[1]. These rate structures include:

1. *Uniform* – A single charge per unit of volume for all water used. In some cases, a uniform rate structure is called a *Uniform by Class* rate structure. Under this structure, the volume rates differ by class to recognize the difference in the cost of serving the customer class.

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[1] American Water Works Association, *Manual of Water Supply Practices-M1, Principles of Water Rates, Fees, and Charges*, Fifth Edition, (Denver, Colorado: American Water Works Association, 2000).

2. *Declining block* – A schedule of rates applicable to blocks of increasing usage in which the usage in each succeeding block is charged at a lower unit rate than in the previous blocks. This rate structure is less common today because of the adverse impact it has on water conservation.

3. Increasing or *Inclining block* – A schedule of rates applicable to blocks of increasing usage in which the usage in each succeeding block is charged at a higher unit rate than in the previous blocks.

4. *Seasonal* – Seasonal rates are based on the cost of service variations with respect to system seasonal requirements

These structures can be used in combination, either as different rate structures by class and/or in combination with each other, (e.g., uniform-seasonal, seasonal-inclining block, etc.)

In addition to these basic structures, there are individualized rate designs that use elements of these structures to address an individual customer's consumption patterns.

Wastewater Rate Structures

Wastewater utilities generally focus their rate structures on properly accounting for the differences in the pollutant loadings of the contributed wastewater. The pollutant loadings are a major cost driver for wastewater systems.

Alternative Rate Structures

Each of the basic rate structures listed above are described in more detail below.

Water Rate Structures

Uniform Rates

The uniform rate structure is a simple rate design that is relatively common in the industry. Figure 1 depicts a uniform rate design. Under the uniform rate design, all water is priced at the same level regardless of the quantity purchased.

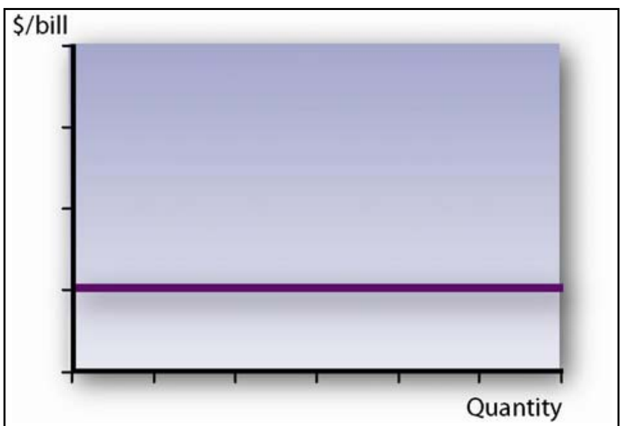

Figure 1: Uniform Rates

This rate design is not only simple to administer, it is relatively simple for customers to understand and, therefore, somewhat effective as a price signal. Additionally, the rate setting process is fairly simple under a uniform rate structure, because only the total annual demands by class are required to determine the rate. The analyst does not require the detailed billing data that is necessary to estimate revenues under a block or seasonal rate design.

This reliance on annual water demands also makes the uniform rate relatively more effective in protecting the utility's financial performance in years with poorer water sales than an inclining block structure or a seasonal structure.

One common concern of a uniform rate structure is its inability to send a seasonal price signal. This lack of a seasonal price signal may not provide adequate incentive for customers to manage their peak-summer use. In this way, a uniform rate structure generally is considered to have less of a conservation incentive than a seasonal or inclining block structure.

AWU uses a uniform rate structure by class for its wholesale customers.

Declining Block Rates

Figure 2 depicts a declining block rate structure. Under this structure, the cost per unit of water declines as the amount of water purchased increases.

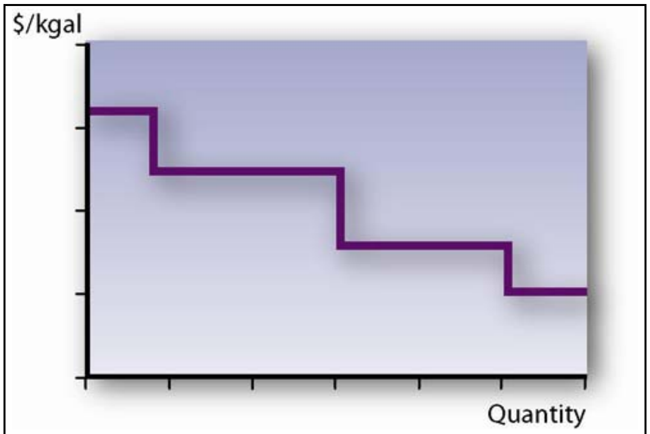

Figure 2: Declining Block Rates

The use of declining block rates is not as prevalent as it once was. This lack of popularity can be traced to the increasing attention that conservation receives in the rate design process. Historically, rate analysts used declining block rates to reflect the cost structure of utilities where the largest customers have the lowest demand factors, and therefore, paid the lowest rate. Although some utilities continued to use declining block rates for this purpose, uniform rates by class and other forms of inclining block rates have gradually replaced these structures.

Inclining Block Rates

Figure 3 presents an inclining block rate structure. Under this structure, the rate charged increases for higher levels of water usage.

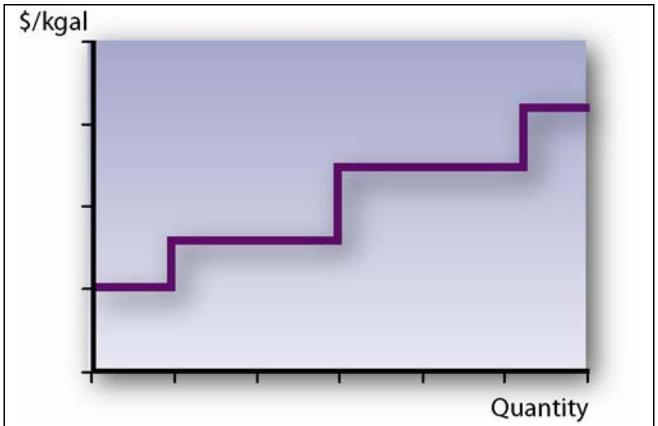

Figure 3: Inclining Block Rates

Inclining block rates are assumed to promote water conservation better than the uniform or declining block structures because the marginal cost of water that the customer faces increases for greater water purchases.[2] Because of its conservation effectiveness, this structure is often used in areas where there is a need to conserve water and/or reduce peak use.

Inclining block rates are relatively more complex to develop and administer than the previous two rate structures, and, if not designed carefully, may lead to revenue instability or violate cost-of-service principles.

Where there is a diverse customer base, the thresholds[3] for the inclining block rates may need to be set by customer class and/or meter size. Block thresholds set for a homogenous class are more likely to send a conservation signal than block thresholds set for the entire system.

Seasonal Rates

Figure 4 presents a seasonal rate design. Under a seasonal rate design, the utility establishes rates that reflect the difference in the cost of service for the off-peak and peak-seasons. AWU uses a seasonal rate design for its multifamily, commercial, and industrial customers.

Seasonal water rates are designed with the notion that rates should be higher during peak use periods and that the customers who place those demands (e.g., peak hour or peak day) on the system should pay more. Typically, this peaking occurs in the summer. For cities that have large seasonal fluctuations, due to weather or tourists, etc., and/or need to manage peak demands, this may be an ideal structure. While seasonal rates are effective in encouraging conservation, they may increase the volatility of the utility's revenues. A

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[2] Some analyst question whether customers respond to their marginal cost of water or to the average cost of water (i.e., their total bill.) In general, economists agree that customers react to their perceived price of water, which is influenced by factors such as public education, community values, etc.
[3] Block thresholds are the consumption values at which the rates change. For example, AWU currently assesses higher rates for residential customers once the customer's use exceeds 2 thousand gallons per month. The first block threshold, in this example, is 2 thousand gallons.

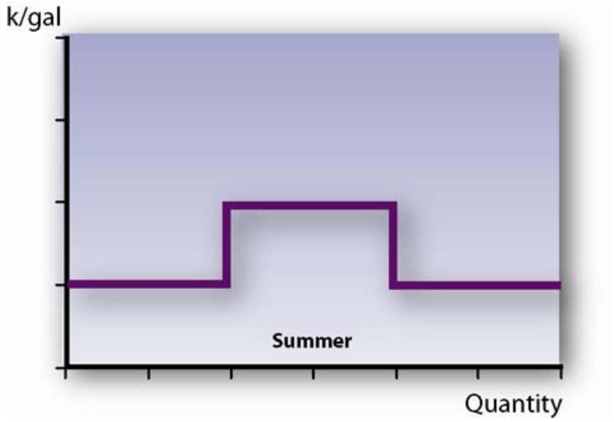

Figure 4: Seasonal Rates

cool or wet summer may reduce the utility's revenues, thereby increasing its volatility and reducing its financial health.

Seasonal rates can be used in combination with other rate structures.

Excess–Use Rates

An excess-use rate design is similar to an inclining block rate structure except the block thresholds are set individually for each customer based on the customer's average winter consumption (AWC).[4] This approach of setting individual block thresholds provides a way to implement increasing block rates for utilities with diverse customer bases. Each customer has its own block thresholds based on their individual AWC.

As an example, an excess-use rate structure could charge a lower block rate for consumption up to 100 percent of the customer's AWC. A higher rate would apply for consumption between, as an example, 100 percent of AWC and 200 percent of AWC. A third block would apply for yet higher consumption levels.

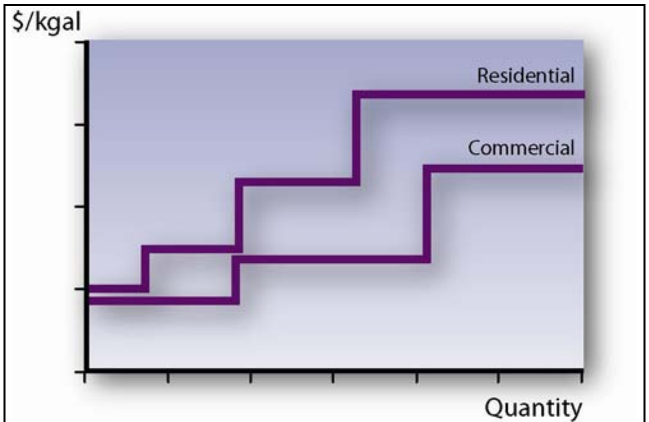

Figure 5: Individualized/Budget Rates

Excess-use rates are similar to inclining block rates in that there is a higher charge for peak use. Excess use rates differ from seasonal pricing in that the pricing is higher for a use in excess of some base amount. Defining and determining the base amount of use requires effort as the base use must be determined either for the class or for each individual customer. The base use can be tied to indoor water use and/or it could also be determined with additional considerations such as those used in the budget-billing example described next. If excess use is done by class of customer, care must be taken to define fairly homogenous users in order to address equity and customer impact concerns.

[4] Average winter consumption is the most common basis for excess-use rates. However, other bases can be used. An example of an alternative basis is average annual consumption.

Water Budget Rates

Figure 5 depicts a hypothetical water-budget rate design. A water budget based-rate structure establishes a monthly water budget by individual customer (or customer class). The budget typically provides a certain amount of water that the utility deems is an efficient level of use for indoor and outdoor use. The outdoor-use component of the budget can be based on the amount of landscaped area and evapotranspiration[5] rates (ET) experienced during the billing period in the utility's service area. This measure allows the utility to determine a specific irrigation requirement per square foot of landscaped area.

The indoor component of the water budget for an individual account might consist of a budget for the winter months with no irrigation allowance. This can be estimated by using the customer's AWC for the previous year. Additionally, in some cases, the indoor budget is set based on the household size or other demographic measures.

Some suggest that this type of structure is one of the most effective at sending conservation signals to each customer. The downside is that it is also one of the more complex structures to implement and explain to customers. Because of the effectiveness at sending a conservation signal, this structure does not do the best job of promoting revenue stability.

Some analysts consider an excess-use rate structure to be a simplified water budget rate structure where the individual budgets are a percentage of the customer's AWC.

Wastewater Rate Structures

There are two approaches generally used for wastewater rate design. These general approaches are:

1. Quantity/quality rates; and
2. Extra-strength surcharges.

Some utilities mix the two general approaches to enhance the equitability of their system of rates while maintaining control of the costs of sampling and administration.

Quantity /Quality Rates

Under the quantity/quality rate structure, specific rates are developed for individual customer classes based on the estimated strength of the wastewater contributed by that class. Utilities may use multiple sources of data to obtain strength-based information in order to classify their commercial and industrial customers. In Issue Paper #4, we discussed the manner in which the strengths for customer classes are developed.

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[5] Evapotranspiration rates are meteorological measures of the amount of moisture plants need based on actual weather conditions (e.g., temperature, relative humidity, etc.)

A study conducted by the California State Water Resources Board and the Environmental Protection Agency (EPA) in 1982, with a revision in 1998, developed a listing of common commercial customer classes with estimated strengths. This document has been used in numerous studies over the years and has been accepted as a proxy for estimating commercial customer class strengths. Regardless of the manner of estimating wastewater strengths for each customer class, the quantity/quality approach categorizes customers according to estimated strengths and sets rates that recover the cost of serving those customers.

Extra-Strength Surcharges

Under the extra-strength surcharge approach, costs associated with high-strength wastewater are separated from the total costs, and what remains is recovered in a common domestic-strength wastewater rate. Under this approach, all customers subject to the extra-strength surcharges are charged the common domestic-strength wastewater rate and a surcharge to recover the additional cost incurred to treat their high-strength waste. The levels of pollutants measured in the wastewater determine the level of the surcharge. These measures of the level of pollutants for the extra-strength surcharge are generally based on sampling programs implemented by the utility.

The definition of domestic-strength wastewater is an important part of assessing extra-strength surcharges. Generally, utilities conduct a mass balance exercise to estimate the average strength of domestic waste. This process was discussed in Issue Paper #4. Once the concentration of domestic-strength wastewater is estimated, a reasonable bound around the average is determined. Wastewater exceeding those reasonable bounds is subject to the extra-strength surcharge.

Under AWU's current approach, domestic-strength wastewater is assumed to have an average concentration of 131 mg/L for BOD, and 187 mg/L for TSS. AWU's current thresholds for extra-strength surcharges is 200 mg/L for both BOD and TSS.[6]

Methodological Options Under Review

The following rate design policies are discussed in this issue paper:

1. What is the best method for providing a subsidy to low-income customers?

2. How should AWU recover a subsidy to low-income customers?

3. Should AWU introduce a fifth block for single-family residential customers?

[6] In some cases the constituents to wastewater may inhibit the BOD measurements. The utility conducts an alternative test as well called a COD test. In circumstances where the COD test is more accurate, the utility uses it to determine the extra-strength surcharges.

4. What conservation incentives should exist for wholesale customers?

5. How should customers with separate irrigation meters be treated?

The first four issues are discussed in this Issue Paper. The fifth issue, "How should customers with separate irrigation meters be treated?", will be the subject of a subsequent issue paper.

The discussion of each issue includes:

- Overview of the issue,
- Description of the alternatives,
- Evaluation of the alternatives using the executive team's evaluation criteria, and
- Consultant's preliminary findings and recommendations.

After presentation to the executive team and public involvement committee, the consulting team will finalize its recommendations.

Issue 1: What is the best method for providing a subsidy to low-income customers?

Overview of the Issue

Enhancing the affordability of water and wastewater services for customers of limited financial means has been an ongoing objective of AWU and its citizens. Ultimately, the approach that AWU uses to assist low-income customers must meet the social and political needs of the City rather than technical cost-of-service concerns. The reader should consider the nature of this policy question when reviewing our evaluations of the alternatives and our recommendations.

Description of Alternatives

The two available alternative methodologies are:

1. Provide a discounted rate for consumption in blocks 1 and 2 (current approach).
2. Waive the fixed charge for customers that qualify as low-income households.

The primary difference between the options is the degree of administrative burden and the effectiveness of the policy. The current approach is quite easy to implement and works easily within AWU's current rate structure. However, the benefits are distributed indiscriminately and provide the same discount for users with low incomes and those without. This broad distribution limits AWU's ability to lower the cost of water for customers of limited means in a way that a more focused program would not.

Unfortunately, a more focused program may require substantial effort to pre-qualify customers as “low-income”. AWU is collaborating with Austin Energy to identify qualifying customers.

Evaluation of Alternatives

Attachment A presents the weighted evaluations of the alternatives.

Implementation Criteria

Pre-qualifying customers who are low income could have significant administrative burden and risk of implementation. Alternatively, providing a lower, lifeline-type rate for residential customers imposes little administrative burden and has very low risk of implementation. However, the current approach may not be sustainable over time since it provides a discount to all single-family residential customers—even those customers with relatively high incomes and ability to pay. For this reason, we believe the current policy may not be durable over time. Also, we suspect that the public can easily understand a low-income policy that provides a discount only to customers with low incomes. For that reason, we scored the current approach lower for public understanding.

Equity

The alternatives have similar impacts on equity. Neither option is particularly capable of delivering intraclass equity. The concept of a low-income discount violates cost-of-service equity by design. A low-income subsidy is intended to create a situation where customers with limited financial capabilities are subsidized by other utility customers. Since the current low-income program is recovered from single-family residential customers only, we have rated both options neutral for interclass equity.

The most common approach to assist low-income customers is a lifeline rate similar to AWU’s current approach. For that reason, we have rated the current approach higher for adherence to industry standards.

Customer

Waiving the fixed charges is likely more affordable for residential customers. We suggest this since low-income water customers may have large families and require water beyond the discounted 9 kgal per month allowed under the current methodology. Water consumed in excess of 9 kgal per month is priced slightly higher to recover the discounts given in blocks 1 and 2. By focusing its efforts on low-income customers only, the total cost of the subsidy might be reduced, thereby reducing the total water bill for low-income customers.

The current approach of having higher block rates to subsidize the first two blocks likely introduces rate shock and volatility for customers. The rate shock and volatility can occur when their consumption reaches the higher blocks and are priced significantly higher than the lower blocks.

The alternatives did not vary with respect to the other customer criteria.

Conservation

The current approach may not encourage water conservation during the off-peak period. Since water is subsidized for the first two blocks for all customers, customers may not have as strong an incentive to conserve when their consumption is within the first two blocks. This situation likely occurs during the off-peak periods and will therefore have a greater impact on average-day savings (as opposed to peak-season or peak-day savings.)

Both alternatives may enhance conservation during the peak-season and peak-day. The current approach results in a more steeply formed rate structure—meaning that water consumed in the higher blocks is priced significantly higher. The proposal may also enhance conservation during the peak periods by pricing the volume portion of the water for low-income customers higher than the current approach. It is difficult to say which approach would generate the greatest savings.

Financial

Revenue sufficiency is a significant concern for the existing rate structure. By keeping the lower block rates affordable for all, pressure may be placed on AWU's overall rate structure so the higher block rates do not become too punitive.

The current rate structure also increases the volatility of the revenues for the utility by establishing very high rates for the most sensitive usage. Because of the relatively low cost of the proposed alternative, if desired, AWU could increase the stability of its rates by increasing the price of the first two blocks.

The volatility in revenues increases the risk of the current rate design. The other financial criteria do not vary between the alternatives.

Preliminary Findings and Recommendations

The question of low-income subsidies is inherently a public policy issue. Although our evaluation framework explicitly incorporates the criteria developed by the executive team, we feel less prepared to offer opinions in this area. Considering these caveats, the consulting team recommends AWU consider waiving the fixed charges for low-income customers through a cooperative program with Austin Energy.

Issue 2: How should AWU recover a subsidy to low-income customers?

Overview of the Issue

If AWU has a program that reduces the costs for low-income customers, that revenue requirement will need to be recovered from other customers. Like the issue of a low-income subsidy, the allocation of burden of the subsidy is a public policy issue.

Essentially, a low-income subsidy does not change the overall cost of operating the utility. Rather it redistributes the burden of the utility to other customers. The question presented here is how that burden should be redistributed.

Description of Alternatives

The two available alternative methods are:

1. Recover the subsidy within the residential class (current approach), or
2. Recover the subsidy from all classes.

The difference between the alternatives is fairly clear. Under the first alternative, the entire cost of a low-income subsidy program is recovered from other single-family residential customers. This is the current policy of AWU. The subsidy incurred to keep blocks 1 and 2 below the cost of service are recovered within blocks three and four.

As an alternative, the burden of the subsidy could be allocated to all customer classes.

Evaluation of Alternatives

Implementation

Three implementation criteria differ between the alternatives. Public understanding may be better if the burden of the subsidy for single-family residential was contained within the single-family residential class. However, it may be more acceptable to the public and political leaders to spread the burden among all of AWU's customers and treat the burden that results from the low-income subsidy as a societal cost. Also, a policy that spreads the burden more widely may be slightly more sustainable depending on the size of the low-income burden.

Equity

If the subsidy is contained within the single-family residential class, it will be more equitable from an interclass perspective. Alternatively, intraclass equity will be diminished less if the burden of the subsidy is shared with other classes. Industry standards are not clear on this issue. But it is common for water utilities to use rate design within a class to provide assistance to low-income customers in a manner very similar to AWU's current approach.

The other equity criteria do not vary based on the alternatives.

Customer

Recovering the burden of the subsidy within the residential class only negatively affects the affordability of water for single-family residential customers but preserves the economic development aspects. Also, AWU's rate structure is more volatile if it recovers the burden solely within the upper blocks for residential customers. We do not expect the ability to understand the bill to be affected by the alternatives.

Conservation

The current approach likely encourages more peak-day and peak-season conservation since it focuses the recovery of the subsidy burden on the upper block rates. This focus likely encourages residential customers to conserve water more aggressively than if the burden was diffused over all other customer classes. For these same reasons, we expect that sustainability may be greater under the status quo.

Financial

Revenue sufficiency may be improved by recovering the subsidy burden from all customer classes. A broader base for the recovery of the subsidy may reduce the pressure on AWU's revenues.

Also, a broader distribution of the subsidy burden may reduce the percentage of the burden recovered during AWU's peak periods. This more diffused recovery approach would likely reduce the volatility of revenues, thereby enhancing revenue stability.

The other financial criteria do not vary by alternative.

Preliminary Findings and Recommendations

Like the question of low-income rates, how a utility recovers a subsidy burden is inherently a public policy issue. Although our evaluation framework explicitly incorporates the criteria developed by the executive team, we feel less prepared to offer opinions in this area. Considering these caveats, the consulting team recommends AWU recover the burden of its low-income program from all customer classes except where prohibited by contract or other legal requirement.

Issue 3: Should AWU introduce a fifth block for single-family residential customers?

Overview of the Issue

The City formed a Water Conservation Task Force as part of its efforts to enhance the conservation of water. This task force produced a set of far reaching proposals for AWU. One of the Task Force's proposals was the implementation of a fifth residential rate block for consumption above 25 kgal per month. The Task Force's goal is to implement the new rate block to provide an even greater incentive to conserve water.

Description of Alternatives

The three alternative methods are:

1. 4-block structure (current);

2. New 5th Block for consumption exceeding 25 kgal per month; and
3. Revised 4-block structure.

The exact details of the rate structure alternatives will be developed with staff and presented to the PIC using a conservation-impact model being developed by Red Oak. The alternatives described here are hypothetical alternatives, designed to present the general concepts.

The revised 4-block option will be designed to achieve the conservation benefits of a fifth block without the diminishment in customer understanding that a 5-block structure can create. A conservation rate structure is most effective when it serves as an efficient consumer price signal about the true cost of water. Complicated rate structures can reduce the conservation effectiveness if customers do not or cannot understand the relationship between usage and cost. In some regards, a simpler rate structure can provide greater consumer confidence in that they are interpreting the price signals appropriately and let the price signals influence their consumption decisions.

Evaluation of Alternatives

Implementation

The administrative burden of adding a fifth block is expected to exceed that of either maintaining the current block rate structure or implementing a revised four-block rate structure. We expect that adding a fifth block to your current rate structure may diminish customer understanding. We have found that block rate designs with more than three blocks tend to confuse consumers and may reduce the effectiveness of a sharper price signal.

It appears that the Water Conservation Task Force conducted extensive public outreach and that its findings were well founded in the political and public acceptance. For that reason, we have rated the fifth-block structure as having more public and political acceptance.

Because of the complexity of setting rates and forecasting revenue with new and/or additional blocks, we have rated the fifth-block structure as having more risk of implementation. Considering the work of the Water Conservation Task Force, we expect the fifth-block structure to be more durable.

Equity

The equity criteria do not vary by alternative.

Customer

We expect that the fifth block may have more rate shock than either of the four-block options. Also, we expect the bills under the fifth-block structure to be less understandable. The other customer criteria do not vary by alternative.

Conservation

Comparing the conservation effectiveness among the alternatives is difficult. Additional blocks do not necessarily increase the conservation effectiveness of a rate design. The establishment of meaningful thresholds that inform consumer behavior can be just as important. We expect that a fifth-block structure and a revised four-block structure could be designed to elicit a similar conservation response. We expect the conservation response of these alternatives to be greater than the response under the existing four-block structure. For that reason, we have evaluated the five-block structure and the revised four-block structure as being more effective for peak-day, and peak-season conservation; and sustainability.

Financial

We expect revenues to be more stable under the existing rate structure than either of the alternative rate structures. Generally, a rate design that puts more revenues at risk to fluctuations in peak summer use (which is more vulnerable to weather impacts) is less stable and imposes greater financial risk. The other financial criteria do not vary based on the alternatives.

Preliminary Findings and Recommendations

The consulting team tentatively recommends AWU modify its current four-block structure to achieve greater conservation. Furthermore, the consulting team recommends that the conservation impact model be developed to support a five-block rate analysis.

Issue 4: What conservation incentives should exist for wholesale customers?

Overview of the Issue

In addition to providing guidance on residential water rate design, the Water Conservation Task Force also recommended that AWU conduct a cost-of-service study that considers conservation rate structures for wholesale customers.

Description of Alternatives

The three available alternative methods are:

1. Uniform rates by wholesale class (current approach),
2. Seasonal rates, and
3. Excess-use rates.

Each of these rate designs is discussed in the earlier sections of this Issue Paper. Because each wholesale customer is its own customer class, each rate structure alternative will be designed to generate the same revenue requirement consistent with the cost of service. The primary differences will be in the interim incentive to reduce consumption, avoid potentially higher costs, and to decrease both the volatility of costs for the wholesale customers and revenues for AWU.

Evaluation of Alternatives

Implementation

Uniform rates by class have very little administrative burden. Because of limitations in the billing system, we expect the excess-use rate structure to have the most administrative burden. However, the administrative burden may not be significant since AWU currently prepares manual bills for most, if not all, wholesale customers.

Because of the support of the Water Conservation Task Force, we expect that a seasonal or excess-use rate design would be more politically acceptable than the existing rate structure. Similarly, we expect the same findings for policy durability.

Conversely, we expect the risk of implementation to be highest for the excess-use rate design and lowest for the existing rate design.

The other implementation criteria do not vary based on the alternatives.

Equity

Uniform rates by class are the most common wholesale water rate in the industry. Excess-use rates tend to be more prevalent for commercial customers. The other equity criteria do not vary by alternative.

Customer

The conservation-based rates are more likely to have occasional rate shock if water sales to the wholesale customers are different than expected. The other equity criteria do not vary by alternative.

Conservation

Conservation savings from the new rate design are likely quite small since each wholesale customer is currently its own class. The rates will be designed to generate the same annual revenue requirements. There may be some conservation benefit from seasonal and excess-use structures, but it will generally be quite small.

Financial

Both the seasonal and excess-use rate designs may increase the volatility of wholesale revenues to AWU. Depending on the specifics of the rate design, summers that are cooler or wetter than normal may reduce total revenue for AWU. This reduces revenue stability and increases the financial risk.

Preliminary Findings and Recommendations

The consulting team recommends that AWU continue to use its uniform rate by customer class and work with its wholesale customers to achieve greater water conservation through other mechanisms. If AWU does pursue a conservation rate for wholesale customers, the consulting team recommends it adopt a seasonal rate until its new billing system is in place.

A2908-083

City of Austin
Issue Paper # 5: Rate Design

Attachment

A

Evaluations of Alternatives

REDOAK CONSULTING
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Evaluations Based on Average Ratings

Providing a Low-Income Subsidy

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Lower Rate for Blocks 1 and 2 (Current)	███████	████	█████	███████	█████	███
Waive fixed charge for Low-Income Customers	███	██████	█████	███	█████	███████
Ratings	████	█████	█████	████	█████	█████

	Equity				
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**
Lower Rate for Blocks 1 and 2 (Current)	█████	███	█████	█████	██████
Waive fixed charge for Low-Income Customers	█████	███	█████	█████	████
Ratings	█████	█████	████	████	████

	Customer			
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**
Lower Rate for Blocks 1 and 2 (Current)	████	█████	████	█████
Waive fixed charge for Low-Income Customers	███████	█████	███████	█████
Ratings	██████	████	█████	████

	Conservation			
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**
Lower Rate for Blocks 1 and 2 (Current)	███	██████	██████	██████
Waive fixed charge for Low-Income Customers	███████	██████	██████	██████
Ratings	█████	████	██████	██████

	Financial				
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**
Lower Rate for Blocks 1 and 2 (Current)	███	████	█████	█████	████
Waive fixed charge for Low-Income Customers	███████	██████	█████	█████	██████
Ratings	███████	██████	██████	██████	██████

Alternatives	**Weighted Average Score**
Lower Rate for Blocks 1 and 2 (Current)	█████████
Waive fixed charge for Low-Income Customers	███████████

Average Ratings
Providing a Low-Income Subsidy

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Lower Rate for Blocks 1 and 2 (Current)	6.9	3.9	4.9	6.9	4.9	3.0
Waive fixed charge for Low-Income Customers	3.0	5.9	4.9	3.0	4.9	6.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Lower Rate for Blocks 1 and 2 (Current)	4.9	3.0	4.9	4.9	5.9	
Waive fixed charge for Low-Income Customers	4.9	3.0	4.9	4.9	3.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Lower Rate for Blocks 1 and 2 (Current)	3.9	4.9	3.9	4.9		
Waive fixed charge for Low-Income Customers	6.9	4.9	6.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Lower Rate for Blocks 1 and 2 (Current)	3.0	5.9	5.9	5.9		
Waive fixed charge for Low-Income Customers	6.9	5.9	5.9	5.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Lower Rate for Blocks 1 and 2 (Current)	3.0	3.9	4.9	4.9	3.9	
Waive fixed charge for Low-Income Customers	6.9	5.9	4.9	4.9	5.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
Lower Rate for Blocks 1 and 2 (Current)	556
Waive fixed charge for Low-Income Customers	647

Evaluations Based on Average Ratings
Method of Recovering Low-Income Subsidy

Alternatives	Implementation: Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility	Policy Durability
Within the class (Current)	█████	██████	████	█████	█████	█████
From All Classes	█████	████	██████	█████	█████	██████
Ratings	████	█████	█████	████	█████	█████

Alternatives	Equity: Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards	
Within the class (Current)	███████	███	█████	█████	██████	
From All Classes	███	██████	█████	█████	████	
Ratings	█████	█████	████	████	████	

Alternatives	Customer: Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill		
Within the class (Current)	███	███████	███	█████		
From All Classes	███████	███	██████	█████		
Ratings	██████	████	█████	████		

Alternatives	Conservation: Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability		
Within the class (Current)	█████	███████	███████	███████		
From All Classes	█████	█████	█████	█████		
Ratings	█████	████	██████	██████		

Alternatives	Financial: Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk	
Within the class (Current)	████	████	█████	█████	█████	
From All Classes	██████	██████	█████	█████	█████	
Ratings	███████	██████	██████	██████	██████	

Alternatives	Weighted Average Score
Within the class (Current)	██████████
From All Classes	██████████

Average Ratings
Method of Recovering Low-Income Subsidy

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Within the class (Current)	4.9	5.9	3.9	4.9	4.9	4.9
From All Classes	4.9	3.9	5.9	4.9	4.9	5.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Within the class (Current)	6.9	2.9	4.9	4.9	5.9	
From All Classes	2.9	5.9	4.9	4.9	3.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Within the class (Current)	2.9	6.9	2.9	4.9		
From All Classes	6.9	2.9	5.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Within the class (Current)	4.9	6.9	6.9	6.9		
From All Classes	4.9	4.9	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Within the class (Current)	3.9	3.9	4.9	4.9	4.9	
From All Classes	5.9	5.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
Within the class (Current)	599
From All Classes	604

Evaluations Based on Average Ratings
5th Block for Residential Customers

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
4-Block Structure (Current)	██████	██████	████	██████	█████	████
5th Block >25 Kgal	████	███	███████	████	█████	███████
Revise 4-Block Structure	█████	██████	██████	█████	█████	██████
Ratings	████	█████	█████	████	█████	█████

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
4-Block Structure (Current)	█████	█████	█████	█████	█████	
5th Block >25 Kgal	█████	█████	█████	█████	█████	
Revise 4-Block Structure	█████	█████	█████	█████	█████	
Ratings	█████	█████	████	████	████	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
4-Block Structure (Current)	█████	█████	██████	██████		
5th Block >25 Kgal	█████	█████	████	████		
Revise 4-Block Structure	█████	█████	█████	██████		
Ratings	██████	████	█████	████		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
4-Block Structure (Current)	█████	████	████	████		
5th Block >25 Kgal	█████	█████	█████	█████		
Revise 4-Block Structure	█████	█████	█████	█████		
Ratings	█████	████	██████	██████		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
4-Block Structure (Current)	█████	██████	█████	█████	██████	
5th Block >25 Kgal	█████	█████	█████	█████	█████	
Revise 4-Block Structure	█████	█████	█████	█████	█████	
Ratings	███████	██████	██████	██████	██████	

Alternatives	**Weighted Average Score**
4-Block Structure (Current)	██████████
5th Block >25 Kgal	██████████
Revise 4-Block Structure	██████████

Average Ratings
5th Block for Residential Customers

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
4-Block Structure (Current)	5.9	5.9	4.0	5.9	4.9	4.0
5th Block >25 Kgal	4.0	3.0	6.9	4.0	4.9	6.9
Revise 4-Block Structure	4.9	5.9	5.9	4.9	4.9	5.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
4-Block Structure (Current)	4.9	4.9	4.9	4.9	4.9	
5th Block >25 Kgal	4.9	4.9	4.9	4.9	4.9	
Revise 4-Block Structure	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
4-Block Structure (Current)	4.9	4.9	5.9	5.9		
5th Block >25 Kgal	4.9	4.9	4.0	4.0		
Revise 4-Block Structure	4.9	4.9	4.9	5.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
4-Block Structure (Current)	4.9	4.0	4.0	4.0		
5th Block >25 Kgal	4.9	4.9	4.9	4.9		
Revise 4-Block Structure	4.9	4.9	4.9	4.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
4-Block Structure (Current)	4.9	5.9	4.9	4.9	5.9	
5th Block >25 Kgal	4.9	4.9	4.9	4.9	4.9	
Revise 4-Block Structure	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
4-Block Structure (Current)	601
5th Block >25 Kgal	587
Revise 4-Block Structure	612

Evaluations Based on Average Ratings

Conservation Incentives for Wholesale Customers

Alternatives	Implementation: Administrative Burden	Public Understanding	Public and Political Acceptance	Risk of Implementation	Legal Defensibility	Policy Durability
Uniform by Class (Current)						
Seasonal Rate						
Excess-Use Rate						
Ratings						

Alternatives	Equity: Interclass	Intraclass	Inter-generational	Inside/ Outside City	Industry Standards	
Uniform by Class (Current)						
Seasonal Rate						
Excess-Use Rate						
Ratings						

Alternatives	Customer: Affordability	Economic Development	Rate Shock/ Volatility	Understand Bill		
Uniform by Class (Current)						
Seasonal Rate						
Excess-Use Rate						
Ratings						

Alternatives	Conservation: Average-Day Savings	Peak-Season Savings	Peak-Day Savings	Sustainability		
Uniform by Class (Current)						
Seasonal Rate						
Excess-Use Rate						
Ratings						

Alternatives	Financial: Revenue Sufficiency	Revenue Stability	Rate Stability	Rate Predictability	Financial Risk	
Uniform by Class (Current)						
Seasonal Rate						
Excess-Use Rate						
Ratings						

Alternatives	Weighted Average Score
Uniform by Class (Current)	
Seasonal Rate	
Excess-Use Rate	

Average Ratings
Conservation Incentives for Wholesale Customers

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Uniform by Class (Current)	6.9	4.9	3.9	5.9	4.9	3.9
Seasonal Rate	4.9	4.9	5.9	4.9	4.9	5.9
Excess-Use Rate	3.0	4.9	5.9	3.9	4.9	5.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Uniform by Class (Current)	4.9	4.9	4.9	4.9	6.9	
Seasonal Rate	4.9	4.9	4.9	4.9	4.9	
Excess-Use Rate	4.9	4.9	4.9	4.9	3.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Uniform by Class (Current)	4.9	4.9	5.9	4.9		
Seasonal Rate	4.9	4.9	3.9	4.9		
Excess-Use Rate	4.9	4.9	3.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Uniform by Class (Current)	4.9	4.9	4.9	4.9		
Seasonal Rate	4.9	5.9	5.9	5.9		
Excess-Use Rate	4.9	5.9	5.9	5.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Uniform by Class (Current)	4.9	5.9	4.9	4.9	5.9	
Seasonal Rate	4.9	3.9	4.9	4.9	3.9	
Excess-Use Rate	4.9	3.9	4.9	4.9	3.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
Uniform by Class (Current)	617
Seasonal Rate	599
Excess-Use Rate	583

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REDOAK CONSULTING
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Issue Paper #6
Rates for Irrigation Customers

Subject: Rates for Irrigation Customers

Date: March 10, 2008

Introduction

In August of 2006, the City of Austin created a Water Conservation Task Force to develop policies to achieve water conservation goals within the Austin Water Utility's (AWU) service area. In its report, the Water Conservation Task Force found:

> The Utility's current water rate structure does not provide adequate conservation price signals for high use residential customers, irrigation accounts, or commercial and multi-family customers.[1]

Based on its findings, the Water Conservation Task Force adopted several specific water conservation policies. Of particular interest for this Issue Paper is Policy CI-3 which is provided in Attachment A.[2] Among other things, this policy requires the utility to:

> Conduct a cost of service study to evaluate . . . establishing commercial irrigation rates comparable to highest residential tiers. . .

This Issue Paper addresses this policy.

Discussion of Irrigation Rate Issues

Description of Existing Irrigation Accounts

As of September 1, 2007, AWU provides separate metered irrigation services to approximately 3,000 customers that are members of each of its customer classes. (Attachment B presents an analysis of AWU's irrigation customers.) Since 1998, AWU has required all commercial and multi-family customers connecting to its system to install a separate irrigation meter for water used for outdoor irrigation. Other customers have opted to install separate irrigation meters for various reasons. Some reasons for installing separate irrigation meters include:

1. Eliminate wastewater charges for water that is not returned to the wastewater system.

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[1] *Water Conservation Strategies Policy Document, Water Conservation Task Force*, Prepared by Water Conservation Division of the Austin Water Utility. Available at http://www.ci.austin.tx.us/watercon/downloads/WCTFPolicyDoc.pdf

[2] Alternatively, see page 25 of the *Water Conservation Strategies Policy Document, Water Conservation Task Force.*

2. Provide additional points of connection to AWU's system. This may be true for some residential customers that have large irrigation demands that cannot be met by a single ¾-inch meter.

3. Other reasons identified by the customer.

Because of the mandatory irrigation meter policy for non-residential customers, AWU currently has a mix of customers within each of its customer classes that have, and do not have, separate irrigation meters. The incomplete implementation of the separate irrigation meter policy means that, out of necessity, some customers will use their single connection to AWU's system for both indoor and outdoor uses. Other customers will use two meters. This presents a significant challenge to AWU in implementing an irrigation rate that applies to some members of a class—but not all.

Sample Bills

Attachment C presents examples of bill calculations with an irrigation rate. These examples illustrate the difficulty in implementing an irrigation rate with a partial implementation of irrigation meters. The examples present two bills for hypothetical customers that consume the same quantity of water for the same purposes (i.e., the same indoor and outdoor usages). Under this example, the only difference is that one of the hypothetical customers has a separate irrigation meter. As presented in the Attachment, the implementation of an irrigation rate that equals the highest residential block might result in an inequity unless other adjustments are made.

Enhancing Equity

The executive team has adopted five measures of equity in its evaluation criteria. These measures of equity are:

1. Interclass equity;
2. Intraclass equity;
3. Intergenerational;
4. Inside/outside city; and
5. Industry standards.

Attachment D is a memorandum that defines the evaluation criteria adopted by the executive team.

There are two primary alternatives to enhancing the measures of equity when implementing irrigation rates. These alternatives are:

1. Customer classification, or
2. Rate design

Customer Classification

AWU can separate its irrigation customers into a unique customer class and establish equitable rates within this customer class. Under this approach, the rates for the irrigation class would include separate rates for both outdoor and indoor water use. The rates for outdoor water use would be set to encourage water conservation. The rates for indoor water use would be set to ensure the customer class recovers its cost of service.

Separate irrigation customer classes could be formed for all of AWU's current retail customer classes. Alternatively, one customer class could be formed for all AWU's irrigation customers.

Rate Design

Rate design alternatives could be created that would enhance the equity of irrigation rates. An example of such a rate design is the excess-use rate design discussed in Issue Paper #5. Under this approach, customers with a meter that provides both indoor and outdoor use would have a higher average-to-peak ratio and would have relatively more water at the higher consumption blocks.[3] This would treat all customers within a customer class fairly and enhance many of the equity evaluations.

Consideration for Residential Customers

As of September 2007, AWU has approximately 141 single-family residential customers with separate irrigation meters (137 inside the city, and 4 outside.) Consumption through these irrigation meters currently receives the discounted rates in blocks 1 and 2.

Oftentimes single-family residential customers are assumed to consume water in a more similar manner to each other than other customer classes. That is, typically, single-family users do not vary as much in size as do multi-family, commercial, and industrial customers. Although household sizes do vary, these impacts are not as great on average water usage as the differences that are common between, for example, a small apartment complex of 4 units and a very large apartment complex of more than 500 units. The degree of variability for single-family residential customers tends to be smaller.

Many utilities have rate designs for single-family residential customers that account for this similarity. AWU, for example, uses the same block thresholds for all single-family residential customers. This policy would be problematic for other customers with great variability.

[3] Issue Paper 5 provides more information on an excess-use rate design. Under an excess-use rate design, the amount of consumption priced at each block rate is determined as a percentage of each customer's average winter consumption (e.g., water purchased above 150 percent of average winter consumption is in block two, etc.). The percentages used to determine the block thresholds are constant for all customers within the class, but the average winter consumption varies for each customer based on their actual metered water use during the winter months. In this way, each customer has its own set of block thresholds under which its rates, and hence its bill, are determined.

Currently, a single-family residential customer with a separate irrigation meter receives water on both meters at the inclining block rate. Therefore, these customers receive water used specifically for irrigation at the discounted block 1 and block 2 rates. Unlike AWU's other customer classes that do not have block thresholds, this additional discounted water diminishes intraclass rate equity.

Methodological Options Under Review

This Issue Paper considers the policies on irrigation customers and irrigation rates. The specific policies include:

1. If AWU implements higher rates for irrigation users, how should the excess revenues generated by the higher rates be used?

2. What is an appropriate level for the irrigation rates?

3. Should single-family residential customers with irrigation meters receive irrigation water at the block 1 and 2 rates?

4. Should AWU create a separate irrigation customer class?

Red Oak discussed the fourth policy in *Issue Paper #4, Customer Classification*. Policies 1 through 3 are discussed in below. The discussion of each policy includes:

- Overview of the issue,
- Description of the alternatives,
- Evaluation of the alternatives using the executive team's evaluation criteria, and
- Consultant's preliminary findings and recommendations.

After presentation to the executive team and public involvement committee, the consulting team will finalize its recommendations.

Issue 1: If AWU implements higher rates for irrigation users, how should the excess revenues generated by the higher rates be used?

Overview of the Issue

The Water Conservation Task Force recommends that AWU establish "commercial irrigation rates comparable to highest residential tiers".[4] The highest residential tiers, however, are established to generate sufficient revenues to subsidize the rates of blocks 1 and 2. It is not known at this time, but Red Oak suspects that the highest residential

[4] See Policy CI-3, page 25 of the *Water Conservation Strategies Policy Document, Water Conservation Task Force.*

block exceeds the cost of providing irrigation water in the peak season. If that is the case, pricing irrigation water at the highest residential block will generate excess revenues.

Description of Alternatives

The five available alternative methodologies are:

- Alternative 1: Use the excess revenues to reduce the rate for indoor water use for irrigation customers;
- Alternative 2: Use the excess revenues to reduce the rates for all customers;
- Alternative 3: Set the irrigation rate at the cost of service to eliminate excess revenues;
- Alternative 4: Set the excess revenues aside for other designated purposes; and
- Alternative 5: Do not establish an irrigation rate (current approach).

Alternatives 1 and 3 require AWU to establish a new customer class or classes for its irrigation customers. Although the Water Conservation Task Force discussed irrigation rates for commercial customers only, AWU has irrigation meters for single-family residential, multi-family residential, and industrial customers too. From a practical standpoint, AWU would likely be required to treat all non single-family residential classes the same.

The first alternative would determine the amount of revenue that irrigation rate generates for each of the irrigation classes (e.g., single-family, multi-family, commercial, etc.). The excess revenue generated from the irrigation rate would then be used to reduce the non-irrigation water used by those irrigation customers as a class.

As an alternative, AWU could use the excess revenues generated from irrigation rates to reduce the rates for all customers within the customer classes to which the irrigation customers belong. Under this approach, AWU would not establish separate irrigation customer classes. Rather, AWU would use the excess revenue generated from, for example, the commercial irrigation rates, to subsidize the other commercial rates.

AWU could establish a cost-of-service rate for irrigation customers that did not generate excess revenues. Under this approach, irrigation meters would be charged their cost of service and other customers would not be affected. This approach requires that AWU create one or more irrigation classes.

AWU could designate specific purposes that the excess revenue would fund. For example, AWU could designate revenue from irrigation customers that exceed the cost of service be dedicated to funding its reuse program.

Finally, AWU could maintain the status quo and not create an irrigation rate.

Evaluation of Alternatives

Attachment E presents the weighted evaluations of the alternatives.

Implementation Criteria

Reducing the rate for indoor use of irrigation customers (i.e., Alternative 1) and setting the irrigation rate at cost of service (i.e., Alternative 3) requires the establishment of one or more irrigation classes. The difficulty with establishing these classes might include:

1. Possibility that the billing system has some irrigation meters improperly identified.

2. Difficulty in identifying all accounts associated with a particular irrigation meter. It is possible that some irrigation accounts provide outdoor water use for more than one indoor-only account. A detailed review of all accounts would be required to align the indoor-only accounts with the corresponding irrigation accounts properly.

3. Some accounts may be classified as irrigation because they are not subject to wastewater charges. However, some of these accounts may not be used to supply irrigation water for outdoor use. AWU is examining the degree to which this may be an issue.

For these reasons, the alternatives that require the formation of new customer classes (i.e., Alternatives 1 and 3) likely have higher administrative burdens and risks of implementation. Alternative 5 has the least administrative burden.

Public understanding may be more difficult for Alternatives 1 and 3 since they require the implementation of new customer classes. For that reason, we rated these alternatives lower on public understanding. In addition, the requirement that new classes be implemented increased the risk of implementation.

Because of the findings of the Water Conservation Task Force, we judge Alternative 5 as being less acceptable to the public and political leadership. The inequities brought about by using the excess revenue from irrigation customers to subsidize other customers makes Alternative 2 less acceptable as well. Also, setting excess revenues aside for designated purposes may not be acceptable. This rating deserves more attention since the ultimate acceptability of setting excess revenues aside may depend on the acceptability of the purpose to which those funds are designated. This consideration makes our ratings for public and political acceptance less certain for Alternative 4.

The current approach, Alternative 5, is most legally defensible. The least defensible is Alternative 2, which results in the potential for similarly situated customers to have significantly different water bills (see the example in Attachment C).

The recommendations of the Water Conservation Task Force anticipate that AWU will reconsider its rate design after AWU implements a new billing system. Considering that AWU expects the new billing system to be implemented within the next three to five years, the policy durability of each of the alternatives is limited. Regardless, it is likely that Alternatives 1 and 3 are the most durable policies since these policies minimize the inequities that other alternatives may have. In addition, considering the findings of the Water Conservation Task Force, it is unlikely that the current policy of no irrigation rate could be maintained for long.

Equity

The interclass equity is likely the highest for Alternative 3 where the irrigation rates are based on the cost of service. This alternative requires the establishment of one or more customer classes and sets the rates to recover the cost of service. For similar reasons, Alternative 1 minimizes the subsidization among customer classes. Alternative 5, the current approach, also minimizes interclass inequities. Alternative 2 likely introduces the greatest interclass inequity. Under this alternative, the excess revenues from the irrigation rates in one class are used to reduce the rates for all customers, including those in other customer classes. Similarly, setting the excess revenues aside for a designated purpose may result in the over-recovery of revenue from one class to the benefit of others. For that reason, it was considered relatively inequitable from an interclass perspective.

Like interclass equity, intraclass equity is poorly served by Alternative 2. This occurs since customers that have an irrigation meter will pay substantially more than similar customers within the class that use water for both indoor and outdoor use but do not currently have an irrigation meter. Alternative 1 also has relatively lower intraclass equity since the reduction in indoor rates may not benefit customers in proportion to their use of outdoor water. For example, customers within a commercial irrigation class with high indoor use and low outdoor use will pay relatively less than their cost of service. Customers within the commercial irrigation class that have higher outdoor use than indoor use will pay more than their cost of service.

Alternative 4 (set the excess revenues aside for other designated purposes) reduces intergenerational equity since future customers will likely benefit from the contributions of current customers. Otherwise, the Alternatives do not vary for this criterion.

Inside/Outside City equity does not vary among the alternatives.

Irrigation rates are fairly common within the industry. Where these rates are used, it is common for the customers to share the benefits of reduced cost of service for their remaining consumption. This benefit is often realized through alternative rate designs like the excess-use rate design. In other situations, these customers may be treated as a separate customer class or other adjustments are made to the rates charged to customers without irrigation meters but that use water for irrigation purposes.

Customer

Alternative 2 (which reduces rates for all customers) will likely have the greatest impact on the affordability of water for single-family residential customers. Customers with irrigation meters tend to be non-residential accounts, and therefore, residential customers may benefit from the subsidies from other classes. Setting the revenues aside may have a positive benefit for affordability. This occurs if the designated purposes benefit the residential class and eliminates what would otherwise be a funding requirement for the residential class.

Economic development may be negatively impacted by Alternative 2 since most irrigation customers are non-residential. This alternative would likely place a net burden on these customers.

The implementation of an irrigation rate at the highest residential block rate will have significant rate shock for AWU's customers. The cost of irrigation water may more than double for many of these customers. For that reason, the alternative of no irrigation rate minimizes rate shock. Setting the irrigation rate at the cost of service has a smaller impact on rate shock since the irrigation rate will likely be lower than the current highest residential block. In addition, these customers will benefit from the reduced cost of service for their indoor use water that would have a lower rate reflecting the lower peaking costs for this service.

Depending on the design of the bill, the ability to understand the bill may not vary among the alternatives.

Conservation

Based on the findings of the Water Conservation Task Force, Alternatives 1 and 4 are likely to have the greatest peak-season and peak-day conservation savings. Alternative 4 may generate the most conservation savings since it does not reduce the rates for other customers or blocks. Alternative 1 may provide slightly less conservation savings since customers may see a reduction in the cost of their water used for indoor purposes. Alternative 5 provides no additional conservation savings, so it received the lowest evaluation. Sustainability is evaluated in a similar manner to peak-season and peak-day criteria.

Financial

Alternative 4 may increase the revenue to AWU and provide additional funding for the purpose that the excess revenue is dedicated. The other alternatives would likely produce the same revenues and might not differ for the revenue sufficiency criterion.

Revenue stability would be greatest under Alternative 4 since the loss of revenue in the irrigation rate would merely delay the funding of the items for which the excess revenue is dedicated. Alternatives 1 and 2 would likely have the largest negative impact on revenue stability since it would put the most irrigation revenue at risk by pricing it at the highest block rate. Alternative 3 would likely have less negative impact than Alternatives 1 and 2 because the cost-of-service rate for irrigation is likely less than the current highest block rate for residential customers. The financial risk of each alternative would receive the same evaluations as for revenue stability.

Rate stability will be unaffected by all alternatives except Alternative 4. Under Alternative 4, the rates may be slightly more stable if the excess revenues can absorb funding fluctuations from year-to-year. Otherwise, the alternatives do not vary.

Preliminary Findings and Recommendations

The consulting team recommends that AWU continue its current practice and not adopt an irrigation rate. Once AWU has implemented a new billing system, the consulting team recommends AWU consider adopting an excess-use rate structure for its commercial customers that recover the cost of service.

If AWU does adopt an irrigation rate before implementing its new billing system, the consulting team recommends that AWU either set the irrigation rate at the cost of service, or dedicate the excess revenue for a specific purpose.

Issue 2: What is an appropriate level for the irrigation rates?

Overview of the Issue

The Water Conservation Task Force directed AWU to evaluate various strategies to reduce water demand within AWU's service area. One of the strategies the Task Force identified was "establishing commercial irrigation rates comparable to highest residential tiers." In addition, the Water Conservation Task Force directed AWU to "Establish a residential fifth tier for use above 25,000 gallons per month." Determining the irrigation rate, therefore, may require the determination of the residential fifth-block rate. The residential fifth-block rate was discussed in Issue Paper #5.

Complicating the setting of irrigation rates is the linkage to the highest "residential tiers." The rate for the highest residential tiers currently does not reflect the cost of providing irrigation water. Rather, the rate for the highest residential tiers is determined to recover the total revenue requirement for the residential class. This rate likely exceeds the cost of service to maintain the affordability of water consumed in blocks 1 and 2. As described earlier in this Issue Paper, setting the rate equal to the highest residential rate will likely generate revenues exceeding the cost of service.

Description of Alternatives

The three available alternative methods are:

- Alternative 1: Set the irrigation rate equal to the highest residential block rate;
- Alternative 2: Set the rate equal to the cost-of-service rate for irrigation; or
- Alternative 3: Do not have an irrigation rate (current approach).

These alternatives are closely related to the alternatives presented for Issue 1. However, the perspective is different. For this issue, we are examining the impact of the rate alone, not the additional revenue it may generate.

The first alternative implements the Water Conservation Task Forces strategy directly. It presents significant equity concerns that may provide difficulty in implementing the approach. The second alternative will provide less conservation incentive than the first, but it ensures that customers pay their fair share of AWU's costs. Finally, the last alternative maintains the status quo.

Evaluation of Alternatives

Implementation

The administrative burden of establishing the cost-of-service rate exceeds the burden of the alternatives. The differences in burden of merely establishing the rate is quite small. Public understanding is unlikely to vary much among the alternatives. Alternative 2 may require the explanation of the cost of service methodology and may be somewhat less understandable.

Considering the findings of the Water Conservation Task Force, Alterative 1 likely has the greatest public and political acceptance. Alternative 3 is likely to be the least acceptable in this regard.

The risk of implementation is generally low. However, Alternative 2 requires the most effort, and therefore, presents the most risk.

All three options are likely to be legally defensible. AWU has not been challenged under its current approach, so Alternative 3 is likely to be defensible. Generally, setting rates at the cost of service provides a more defensible outcome, so Alternative 2 is expected to be most defensible.

When evaluating the policy durability of the alternatives, the findings of the Water Conservation Task Force suggest that Alternative 3 will not provide a long-term solution to AWU. However, the unintended consequences of Alternative 1 (e.g., revenues exceeding the cost of service, etc.) may result in it being revised if adopted.

Equity

Setting the irrigation rate at the highest residential block rate will generate subsidies from the irrigation customers to other customers both within the irrigation customers' classes and to other classes. This outcome can be expected when a rate is set far beyond the cost of service. Since Alternative 2 is based on the cost of service, it will likely minimize the subsidies both within and among AWU's customer classes. Since cost-of-service is a common industry standard, the alternatives received the same evaluations for adherence to industry standards as the interclass and intraclass equities.

The other equity criteria do not vary by alternative.

Customer

Increasing the irrigation rate will likely make water more affordable for residential customers. Largely, however, this depends on how the excess revenues from the rates are used (see Issue 1). Considering the rate alone, however, it is likely that residential rates would be lower if AWU received more revenue from its irrigation customers. Therefore, Alternative 1 was judged the most affordable, and Alternative 3 the least. For economic development, the finding is just the opposite. The higher cost of irrigation is likely to impose a greater burden on businesses, which are the largest users of irrigation water.

Increasing the irrigation rate substantially (more than doubling the rate in most circumstances) will significantly increase the bills for many irrigation customers. For that reason, Alternative 1 is likely to have very significant rate shock. Moving to a cost-of-service rate for irrigation meters might also increase their bills and provide rate shock. If AWU implements either Alternative 1 or 2, it may consider phasing the rates in so customers can adjust their consumption over time (i.e., install different landscape, water saving devices, etc.).

The understandability of the bill does not vary by alternative.

Conservation

The conservation savings are likely to be higher for those alternatives with the highest rates. This depends, in part, on the use of the revenue that exceeds the cost of service. If the revenue is used to reduce the rates for other customers, those customers with the reduced rates may have a diminished incentive to conserve. Considering the use of the revenues separately, Alternative 1 is likely to generate the most peak-day and peak-season savings. Alternative 2 is expected to generate less conservation than Alternative 1, but more than Alternative 3. The sustainability criterion is consistent with the peak-day and peak-season conservation saving criteria. None of the alternatives is expected to affect average-day savings.

Financial

The higher rates under Alternatives 1 and 2 are likely to increase the volatility of AWU's revenue. For that reason, these alternatives received a lower evaluation for revenue stability, rate stability, and financial risk.

The other financial criteria do not vary by alternative.

Preliminary Findings and Recommendations

The consulting team recommends that AWU adopt a cost-of-service rate for its irrigation customers. This recommendation must be considered simultaneously with the executive team's decision on Issue 1.

Issue 3: Should single-family residential customers with irrigation meters receive irrigation water at the block 1 and 2 rates?

Overview of the Issue

Currently single-family residential customers with separate irrigation meters receive the advantages of block rates for both their domestic meter (i.e., the meter used to supply their indoor water use) and irrigation meter. In other words, the residential customer with two meters pays the lower block 1 rate for consumption up to 2,000 gallons per month on both meters. This means the customer has the potential to receive a total of 4,000 gallons of water per month priced at the block 1 rate.

AWU currently prices its first two blocks (i.e., consumption from 0 to 2,000 gallons and from 2,000 to 9,000 gallons) at less than the cost of service to make water more affordable for its customers. Also, the higher block rates are designed to encourage the wise use of water during AWU's peak season. The current rate structure for single-family irrigation accounts sends an improper price signal to those limited number of single-family residential customers with a separate irrigation meter.

Attachment B presents an analysis of irrigation customers. Of the approximately 180,000 residential customers, approximately than 140, or 0.08 percent, have a separate irrigation meters. Of those single-family residential customers inside the city limits with separate irrigation meters, the average consumption from June 2007 through September 2007 was approximately 19,000 gallons per month. Approximately 47 percent of this water is priced at the discounted block 1 and 2 rates.

Description of Alternatives

The two available alternative methods are:

- Alternative 1: Provide block 1 and 2 discounted water (current approach); or

- Alternative 2: Price all water at the rates for block 3 and above.

The first alternative maintains AWU's current policy. The second method sets the rate for all water at a minimum of AWU's block 3 rate, thereby eliminating the discounted water.

Evaluation of Alternatives

Implementation

Because few single-family residential customers have a separate irrigation meter, the process of implementation should be fairly simple. The administrative burden of changing the rates for single-family irrigation customers will be slight to none. AWU's billing system currently identifies these customers and applies its 4-block structure to them. Implementing a new rate structure would require updating the rates in the billing system so the block three rates apply to the current block 1 and 2 consumption. The status quo has no administrative burden.

Public understanding is difficult to evaluate. Normally the status quo is considered more understandable to the public because it requires little or no explanation. However, in this case it is not clear the public at large is aware of the current policy. For this reason, Alternative 1 receives a slightly higher evaluation.

Considering the objectives of the Water Conservation Task Force, Alternative 1 may be less acceptable to the public and political leadership than Alternative 2. The policy durability of each option was evaluated on the same basis.

The other implementation criteria do not vary by alternative.

Equity

Interclass and intraclass equity are likely improved by pricing all outdoor water use similarly. Therefore, Alternative 2 performs better than the status quo. Because Alternative 2 is likely closer to true cost of service, it is more compliant with industry standards.

The other equity criteria do not vary by alternative.

Customer

Alternative 1 is relatively more affordable for the small group of customers that have two irrigation meters. Although the economic status of these customers is not known with certainty, we assume that single-family residential customers with a separate irrigation meter likely have elaborate landscaping and a corresponding ability to pay. Given this assumption, affordability may not be important for this policy decision. Rate shock and volatility are likely to vary among the alternatives in the same manner as affordability.

The other customer criteria do not vary by alternative.

Conservation

Alternative 2 may promote conservation in an extremely small amount considering the limited number of single-family residential customers that have a dedicated irrigation meter. These savings are most likely to accrue during the peak season and peak day. Because of the stronger conservation incentive, this alternative is judged to be more consistent with sustainability.

Financial

Alternative 1 may have an extremely small benefit for revenue stability. Again, the small number of customers affected by the policy limits the detrimental effect on revenue stability. The financial risks are evaluated similarly to the revenue stability.

The other financial criteria do not vary by alternative.

Preliminary Findings and Recommendations

The consulting team recommends that AWU charge the block three rate for all consumption below 9,000 gallons per month for water through a dedicated irrigation meter for single-family residential customers. Furthermore, the consulting team recommends that AWU adjust this policy and the rate thresholds to prevent subsidized water being served through irrigation meters.

A2908-083

City of Austin
Issue Paper #6: Rates for Irrigation Customers

SECTION

A

Water Conservation Task Force: Water Conservation Policy CI-3

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

CI-3	**Adjust Utility water rates and modify Utility bills to encourage conservation.**
Applies to:	All customers
Implementation Method:	Cost of service study and changes to the rate structure

The Utility's current water rate structure does not provide adequate conservation price signals for high use residential customers, irrigation accounts, or commercial and multi-family customers. Additionally, many customers do not know what level of water use is appropriate for their needs.

The Utility will:

1. Establish a residential fifth tier for use above 25,000 gallons per month.

2. Conduct a cost of service study to evaluate strategies to reduce water demand by at lest 5 MGD, including:
   a. the level at which to set the fifth tier for residential customers;
   b. establishing commercial irrigation rates comparable to highest residential tiers;
   c. water budgeting rates for commercial customers; and
   d. conservation rate structures for wholesale customers.

It is anticipated that a fifth tier and changes to irrigation rates would be added immediately under the existing billing system. More complex rate changes would not take effect until a new billing system is in place that can accommodate the changes.

The Utility will:
1. Add graphs of historical and current water use to customer bills.

2. Require the new billing system to have:
   a. water budget capabilities;
   b. the ability to include additional conservation information; and
   c. the ability to notify customers when consumption increases dramatically.

Additional FTEs:	0
Additional Cost:	$0
Contract/Commodity Cost:	$0
Peak-Day Savings:	5.0 MGD over 10 years
Cost per gallon saved:	$0

City of Austin
Issue Paper #6: Rates for Irrigation Customers

SECTION

B

Analysis of Irrigation Customers

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Monthly Irrigation Totals

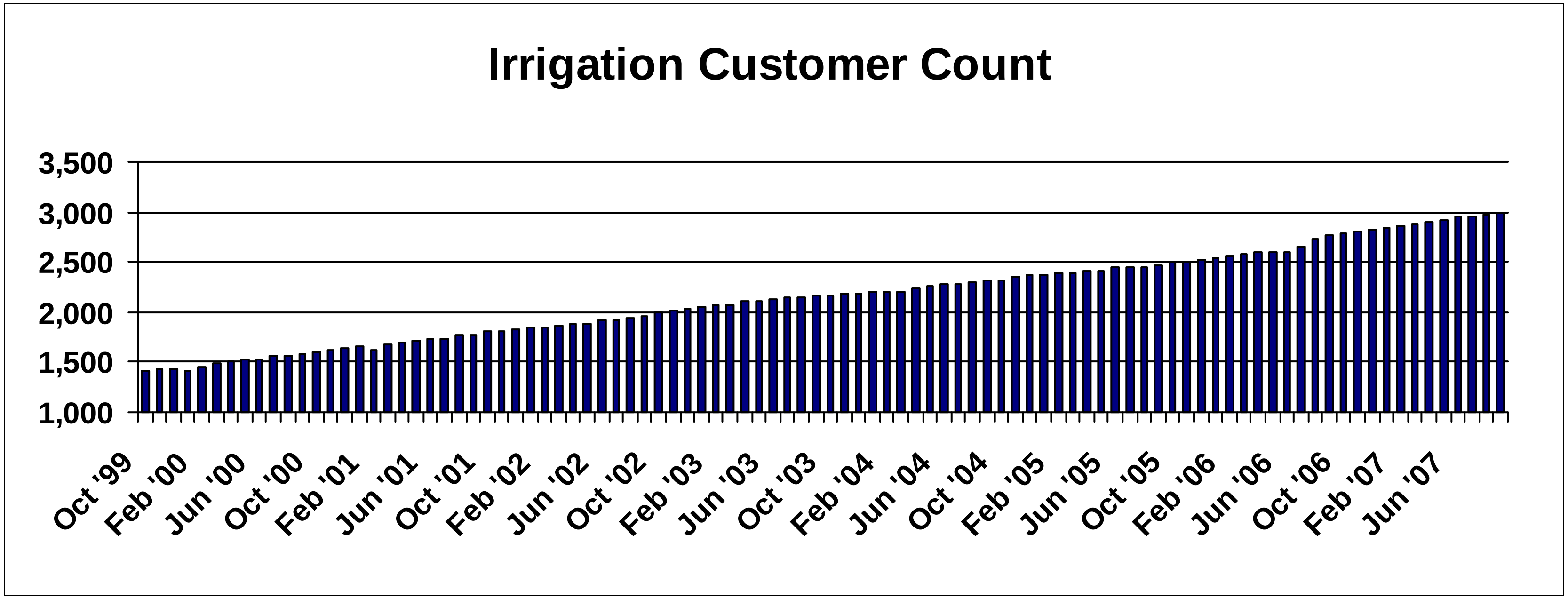
Fiscal Year	Date	Count	Consumption	Revenue
2006-07				
	9/1/2007	2,990	390,198,000	$1,478,002.93
	8/1/2007	2,978	289,075,500	$1,100,311.25
	7/1/2007	2,949	269,339,300	$1,029,445.10
	6/1/2007	2,946	284,865,600	$994,465.97
	5/1/2007	2,917	241,218,100	$842,499.23
	4/1/2007	2,897	219,694,660	$773,935.92
	3/1/2007	2,874	190,884,420	$676,520.76
	2/1/2007	2,865	135,855,030	$487,853.85
	1/1/2007	2,849	217,741,100	$767,822.79
	12/1/2006	2,828	310,589,470	$1,087,952.12
	11/1/2006	2,802	360,796,100	$1,252,566.88
	10/1/2006	2,791	487,394,400	$1,736,844.65
Total		34,686	3,397,651,680	$12,228,221.45
2005-06				
	9/1/2006	2,776	672,684,300	$2,375,651.48
	8/1/2006	2,722	577,496,370	$2,046,716.88
	7/1/2006	2,646	520,060,700	$1,832,713.48
	6/1/2006	2,607	406,637,700	$1,345,303.96
	5/1/2006	2,601	291,493,700	$970,271.66
	4/1/2006	2,589	246,874,800	$829,288.12
	3/1/2006	2,572	212,784,200	$718,719.09
	2/1/2006	2,559	218,453,800	$740,383.21
	1/1/2006	2,548	239,952,500	$814,757.50
	12/1/2005	2,531	318,340,600	$1,069,736.62
	11/1/2005	2,500	397,077,100	$1,323,170.64
	10/1/2005	2,495	508,885,580	$1,712,362.61
Total		31,146	4,610,741,350	$15,779,075.25
2004-05				
	9/1/2005	2,468	539,817,520	$1,808,502.03
	8/1/2005	2,451	513,284,800	$1,716,088.82
	7/1/2005	2,456	511,233,700	$1,713,058.27

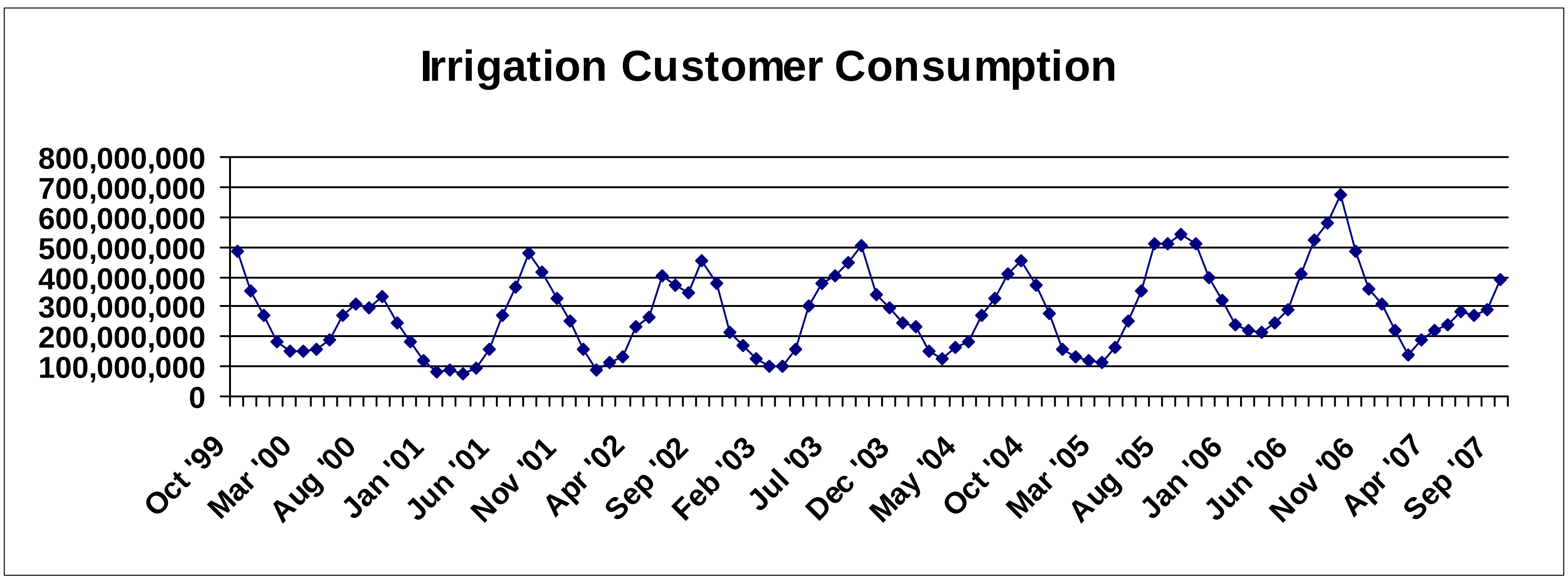
Fiscal Year	Date	Count	Consumption	Revenue
	6/1/2005	2,448	353,908,100	$1,112,754.40
	5/1/2005	2,419	252,883,400	$802,012.78
	4/1/2005	2,413	161,247,500	$520,110.63
	3/1/2005	2,397	116,257,900	$382,071.52
	2/1/2005	2,391	117,622,500	$386,171.58
	1/1/2005	2,370	132,946,600	$436,360.53
	12/1/2004	2,363	154,987,600	$503,138.35
	11/1/2004	2,346	277,613,400	$895,739.83
	10/1/2004	2,307	370,300,100	$1,157,782.87
Total		**28,829**	**3,502,103,120**	**$11,433,791.61**
2003-04				
	9/1/2004	2,307	454,244,900	$1,417,843.67
	8/1/2004	2,297	409,945,900	$1,280,466.30
	7/1/2004	2,284	324,824,600	$1,016,192.91
	6/1/2004	2,272	273,926,600	$800,161.58
	5/1/2004	2,255	184,934,000	$546,057.39
	4/1/2004	2,245	164,757,300	$487,694.98
	3/1/2004	2,209	124,820,300	$373,484.44
	2/1/2004	2,205	151,207,200	$449,626.85
	1/1/2004	2,203	230,506,200	$678,769.16
	12/1/2003	2,189	243,437,600	$714,520.76
	11/1/2003	2,182	296,124,800	$866,566.30
	10/1/2003	2,162	337,669,960	$1,006,980.40
Total		**26,810**	**3,196,399,360**	**$9,638,364.74**
2002-03				
	9/1/2003	2,160	501,417,300	$1,486,435.26
	8/1/2003	2,148	450,095,300	$1,336,178.27
	7/1/2003	2,145	405,089,700	$1,205,749.08
	6/1/2003	2,133	376,077,000	$1,041,359.73
	5/1/2003	2,116	304,320,700	$842,779.72
	4/1/2003	2,100	156,489,000	$440,905.80
	3/1/2003	2,075	97,782,200	$280,792.26
	2/1/2003	2,067	102,223,000	$293,185.98
	1/1/2003	2,051	128,542,600	$365,886.02
	12/1/2002	2,030	169,413,300	$478,340.32

Fiscal Year	Date	Count	Consumption	Revenue
	11/1/2002	2,006	216,949,300	$608,033.47
	10/1/2002	2,004	375,974,200	$1,124,226.93
Total		**25,035**	**3,284,373,600**	**$9,503,872.84**
2001-02				
	9/1/2002	1,965	454,582,000	$1,356,900.33
	8/1/2002	1,942	347,511,300	$1,038,339.69
	7/1/2002	1,927	372,547,100	$1,112,322.79
	6/1/2002	1,915	402,461,450	$1,117,506.95
	5/1/2002	1,890	266,975,500	$741,205.71
	4/1/2002	1,883	230,923,340	$647,012.57
	3/1/2002	1,868	133,046,600	$375,529.60
	2/1/2002	1,854	112,237,760	$320,939.30
	1/1/2002	1,839	89,420,800	$260,127.89
	12/1/2001	1,832	156,941,800	$447,161.32
	11/1/2001	1,808	254,036,230	$715,086.12
	10/1/2001	1,807	326,675,540	$909,486.60
Total		**22,530**	**3,147,359,420**	**$9,041,618.87**
2000-01				
	9/1/2001	1,773	417,329,970	$1,161,592.36
	8/1/2001	1,765	478,279,400	$1,324,593.48
	7/1/2001	1,740	362,481,400	$1,005,502.30
	6/1/2001	1,732	271,246,900	$706,341.60
	5/1/2001	1,719	157,529,300	$412,935.43
	4/1/2001	1,694	93,764,080	$249,229.98
	3/1/2001	1,671	74,015,800	$197,772.37
	2/1/2001	1,623	89,099,300	$236,694.46
	1/1/2001	1,657	80,130,400	$215,391.92
	12/1/2000	1,636	118,027,700	$310,628.94
	11/1/2000	1,619	184,948,300	$484,368.24
	10/1/2000	1,604	246,240,800	$591,132.48
Total		**20,233**	**2,573,093,350**	**$6,896,183.56**
1999-00				
	9/1/2000	1,585	332,223,920	$795,173.42
	8/1/2000	1,566	298,341,300	$714,694.52
	7/1/2000	1,561	311,386,400	$745,255.22

Fiscal Year	Date	Count	Consumption	Revenue
	6/1/2000	1,532	273,480,000	$655,913.62
	5/1/2000	1,530	186,645,400	$450,471.60
	4/1/2000	1,508	158,049,900	$382,688.97
	3/1/2000	1,489	149,529,700	$363,143.21
	2/1/2000	1,454	152,516,400	$370,010.41
	1/1/2000	1,415	181,455,600	$437,956.41
	12/1/1999	1,436	268,987,260	$644,852.63
	11/1/1999	1,430	355,471,500	$850,636.81
	10/1/1999	1,413	483,276,300	$1,153,507.54
Total		**17,919**	**3,151,363,680**	**$7,564,304.36**

Fiscal Year	Date	Count	Consumption	Revenue





Actual Irrigation Consumption By Class

FY	Customer Class	Date	Count	Consumption	Revenue
2006-07					
	Inside City Commercial				
		10/1/2006	2,308	358,566,100	1,317,992.48
		11/1/2006	2,312	261,156,000	935,344.55
		12/1/2006	2,335	229,341,670	824,636.80
		1/1/2007	2,357	153,880,700	561,461.30
		2/1/2007	2,368	89,643,730	337,376.68
		3/1/2007	2,373	131,155,220	482,283.93
		4/1/2007	2,390	156,612,160	571,441.18
		5/1/2007	2,405	167,856,400	610,708.94
		6/1/2007	2,428	203,771,300	736,262.45
		7/1/2007	2,427	187,766,300	746,095.41
		8/1/2007	2,448	202,347,400	802,666.56
		9/1/2007	2,458	268,445,100	1,056,209.20
	Customer Class Total		*28,609*	*2,410,542,080*	*$8,982,479.48*
	Customer Class Average		*2,384*	*200,878,507*	*$748,539.96*
	Inside City Golf				
		10/1/2006	9	4,275,200	15,597.89
		11/1/2006	9	8,915,000	31,260.18
		12/1/2006	10	1,492,500	5,363.02
		1/1/2007	9	863,800	3,139.09
		2/1/2007	10	620,400	2,349.13
		3/1/2007	10	1,040,600	3,785.88
		4/1/2007	10	970,400	3,540.88
		5/1/2007	10	1,000,200	3,644.88
		6/1/2007	10	1,059,100	3,850.44
		7/1/2007	10	2,397,800	9,361.72
		8/1/2007	10	-478,800	-1,684.40
		9/1/2007	10	1,069,600	4,261.45
	Customer Class Total		*117*	*23,225,800*	*$84,470.16*
	Customer Class Average		*10*	*1,935,483*	*$7,039.18*
	Inside City Industrial				
		10/1/2006	2	14,043,300	46,289.75
		11/1/2006	6	9,155,900	29,599.39

FY	Customer Class	Date	Count	Consumption	Revenue
		12/1/2006	6	11,984,600	38,679.53
		1/1/2007	6	9,659,700	31,216.59
		2/1/2007	6	13,869,700	44,730.69
		3/1/2007	6	19,177,100	61,767.44
		4/1/2007	6	14,555,000	46,930.51
		5/1/2007	6	12,691,600	40,948.99
		6/1/2007	6	19,247,000	61,991.82
		7/1/2007	6	20,964,700	74,214.34
		8/1/2007	6	18,984,900	67,225.64
		9/1/2007	6	25,324,600	89,604.80
	Customer Class Total		*68*	*189,658,100*	*$633,199.49*
	Customer Class Average		*6*	*15,804,842*	*$52,766.62*
	Inside City MultiFamily				
		10/1/2006	260	90,219,700	273,937.20
		11/1/2006	259	67,461,300	199,589.18
		12/1/2006	259	52,954,200	157,565.14
		1/1/2007	260	37,623,900	113,052.15
		2/1/2007	261	25,497,800	77,890.31
		3/1/2007	264	30,863,800	93,529.24
		4/1/2007	265	38,310,300	115,080.16
		5/1/2007	269	51,045,500	152,066.14
		6/1/2007	271	50,098,400	149,338.45
		7/1/2007	271	47,861,100	156,728.70
		8/1/2007	276	56,675,300	184,946.30
		9/1/2007	274	76,323,100	247,555.34
	Customer Class Total		*3,189*	*624,934,400*	*$1,921,278.31*
	Customer Class Average		*266*	*52,077,867*	*$160,106.53*
	Inside City Residential				
		10/1/2006	117	4,188,400	22,035.30
		11/1/2006	119	2,819,800	15,132.99
		12/1/2006	119	3,385,000	18,713.74
		1/1/2007	119	2,095,500	11,233.31
		2/1/2007	122	1,292,300	7,077.79
		3/1/2007	123	1,981,300	10,144.18
		4/1/2007	125	1,718,200	8,668.53
		5/1/2007	125	1,844,500	9,497.15
		6/1/2007	128	2,143,700	10,865.46

FY	Customer Class	Date	Count	Consumption	Revenue
		7/1/2007	133	2,035,500	10,244.64
		8/1/2007	135	2,199,600	11,074.58
		9/1/2007	137	3,610,200	19,640.72
	Customer Class Total		*1,502*	*29,314,000*	*$154,328.39*
	Customer Class Average		*125*	*2,442,833*	*$12,860.70*
	Outside City Commercial				
		10/1/2006	81	11,896,100	47,350.62
		11/1/2006	82	7,944,500	31,221.81
		12/1/2006	84	8,965,800	35,135.80
		1/1/2007	83	7,351,300	28,969.59
		2/1/2007	83	3,187,100	13,045.89
		3/1/2007	83	4,793,900	19,183.87
		4/1/2007	85	5,615,900	22,338.61
		5/1/2007	86	4,525,500	18,186.77
		6/1/2007	87	6,099,300	24,209.51
		7/1/2007	86	4,674,000	20,618.42
		8/1/2007	88	4,771,900	21,049.38
		9/1/2007	90	8,666,700	37,490.69
	Customer Class Total		*1,018*	*78,492,000*	*$318,800.96*
	Customer Class Average		*85*	*6,541,000*	*$26,566.75*
	Outside City MultiFamily				
		10/1/2006	11	4,105,200	13,128.45
		11/1/2006	11	3,207,300	9,667.28
		12/1/2006	11	2,321,500	7,063.04
		1/1/2007	11	6,210,100	18,495.52
		2/1/2007	11	1,738,200	5,348.14
		3/1/2007	11	1,817,200	5,586.52
		4/1/2007	12	1,865,500	5,729.75
		5/1/2007	12	2,074,600	6,344.51
		6/1/2007	12	2,287,100	6,969.25
		7/1/2007	12	3,565,300	11,761.10
		8/1/2007	11	4,518,000	14,791.07
		9/1/2007	11	6,378,700	20,801.13
	Customer Class Total		*136*	*40,088,700*	*$125,685.76*
	Customer Class Average		*11*	*3,340,725*	*$10,473.81*
	Outside City Residential				
		10/1/2006	3	100,400	512.96

FY	Customer Class	Date	Count	Consumption	Revenue
		11/1/2006	4	136,300	751.50
		12/1/2006	4	144,200	795.05
		1/1/2007	4	56,100	255.24
		2/1/2007	4	5,800	35.22
		3/1/2007	4	55,300	239.70
		4/1/2007	4	47,200	206.30
		5/1/2007	4	179,800	1,101.85
		6/1/2007	4	159,700	978.59
		7/1/2007	4	74,600	420.77
		8/1/2007	4	57,200	242.12
		9/1/2007	4	380,000	2,439.60
	Customer Class Total		*47*	*1,396,600*	*$7,978.90*
	Customer Class Average		*4*	*116,383*	*$664.91*
	Fiscal Year Total for All Classes		*34,686*	*3,397,651,680*	*$12,228,221.45*
	Fiscal Year Average for All Classes		*361*	*35,392,205*	*$127,377.31*
2005-06					
	Inside City Commercial				
		10/1/2005	2,140	364,320,080	1,280,991.91
		11/1/2005	2,141	299,044,700	1,029,562.77
		12/1/2005	2,171	240,611,400	832,412.69
		1/1/2006	2,184	181,548,400	632,722.71
		2/1/2006	2,191	164,437,100	574,892.99
		3/1/2006	2,199	155,863,300	545,969.54
		4/1/2006	2,206	179,856,000	627,074.29
		5/1/2006	2,217	205,207,800	712,802.44
		6/1/2006	2,221	283,812,100	978,486.31
		7/1/2006	2,231	359,226,800	1,319,575.82
		8/1/2006	2,260	408,785,370	1,500,130.66
		9/1/2006	2,292	466,130,000	1,707,159.98
	Customer Class Total		*26,453*	*3,308,843,050*	*$11,741,782.11*
	Customer Class Average		*2,204*	*275,736,921*	*$978,481.84*
	Inside City Golf				
		10/1/2005	10	4,019,500	14,059.41
		11/1/2005	10	3,917,000	13,366.20
		12/1/2005	10	3,219,600	11,008.99
		1/1/2006	10	2,160,700	7,429.91

FY	Customer Class	Date	Count	Consumption	Revenue
		2/1/2006	10	772,500	2,737.80
		3/1/2006	10	977,800	3,436.79
		4/1/2006	9	1,168,900	4,072.55
		5/1/2006	9	1,696,200	5,854.82
		6/1/2006	9	3,416,000	11,667.74
		7/1/2006	9	2,888,200	10,576.95
		8/1/2006	8	6,436,800	23,398.23
		9/1/2006	9	13,796,700	50,090.36
	Customer Class Total		*113*	*44,469,900*	*$157,699.75*
	Customer Class Average		*9*	*3,705,825*	*$13,141.65*
	Inside City Industrial				
		10/1/2005	1	16,443,000	50,545.26
		11/1/2005	1	8,146,000	25,002.16
		12/1/2005	1	9,720,000	29,818.60
		1/1/2006	1	5,547,000	17,049.22
		2/1/2006	1	9,629,000	29,540.14
		3/1/2006	2	6,615,000	20,326.29
		4/1/2006	1	9,787,000	30,023.62
		5/1/2006	1	10,832,000	33,221.32
		6/1/2006	1	11,518,000	35,320.48
		7/1/2006	1	16,144,000	53,189.16
		8/1/2006	1	15,625,000	51,481.65
		9/1/2006	2	14,916,000	49,160.93
	Customer Class Total		*14*	*134,922,000*	*$424,678.83*
	Customer Class Average		*1*	*11,243,500*	*$35,389.90*
	Inside City MultiFamily				
		10/1/2005	224	105,720,200	300,719.12
		11/1/2005	227	70,542,400	198,362.49
		12/1/2005	228	50,712,400	143,441.13
		1/1/2006	230	36,364,400	103,757.86
		2/1/2006	233	33,824,400	96,721.14
		3/1/2006	235	38,777,500	110,431.06
		4/1/2006	240	45,785,200	129,895.72
		5/1/2006	242	60,887,200	171,802.61
		6/1/2006	243	88,989,700	249,578.10
		7/1/2006	245	119,811,700	362,555.95
		8/1/2006	250	120,265,200	363,942.03

FY	Customer Class	Date	Count	Consumption	Revenue
		9/1/2006	261	148,974,600	450,306.88
	Customer Class Total		*2,858*	*920,654,900*	*$2,681,514.09*
	Customer Class Average		*238*	*76,721,242*	*$223,459.51*
	Inside City Residential				
		10/1/2005	35	1,651,800	9,027.27
		11/1/2005	35	1,428,100	7,678.95
		12/1/2005	35	1,430,700	7,776.21
		1/1/2006	37	1,174,200	6,247.38
		2/1/2006	37	810,000	3,995.92
		3/1/2006	38	882,200	4,466.33
		4/1/2006	42	1,283,800	6,538.99
		5/1/2006	42	1,154,900	5,816.40
		6/1/2006	44	1,973,300	10,766.54
		7/1/2006	68	3,007,200	16,324.75
		8/1/2006	112	5,434,400	29,851.42
		9/1/2006	117	5,949,800	32,892.89
	Customer Class Total		*642*	*26,180,400*	*$141,383.05*
	Customer Class Average		*54*	*2,181,700*	*$11,781.92*
	Outside City Commercial				
		10/1/2005	74	12,341,900	43,420.45
		11/1/2005	75	9,862,900	36,876.37
		12/1/2005	75	9,981,500	37,311.60
		1/1/2006	75	10,974,300	40,955.20
		2/1/2006	75	7,292,500	27,443.01
		3/1/2006	76	6,750,900	25,459.70
		4/1/2006	79	5,972,700	22,628.18
		5/1/2006	78	7,690,400	28,920.54
		6/1/2006	78	11,978,800	44,671.18
		7/1/2006	78	12,518,800	49,771.15
		8/1/2006	79	13,603,100	54,029.90
		9/1/2006	81	16,404,200	65,033.96
	Customer Class Total		*923*	*125,372,000*	*$476,521.24*
	Customer Class Average		*77*	*10,447,667*	*$39,710.10*
	Outside City MultiFamily				
		10/1/2005	9	4,308,500	13,173.38
		11/1/2005	9	4,064,800	11,962.70
		12/1/2005	9	2,618,800	7,754.85

FY	Customer Class	Date	Count	Consumption	Revenue
		1/1/2006	9	2,130,100	6,332.73
		2/1/2006	9	1,680,800	5,025.26
		3/1/2006	9	2,908,700	8,598.45
		4/1/2006	9	2,960,700	8,749.78
		5/1/2006	9	4,018,300	11,827.38
		6/1/2006	8	4,835,700	14,182.24
		7/1/2006	10	6,369,600	20,245.95
		8/1/2006	9	7,119,500	22,560.57
		9/1/2006	11	6,376,000	20,281.47
	Customer Class Total		*110*	*49,391,500*	*$150,694.76*
	Customer Class Average		*9*	*4,115,958*	*$12,557.90*
	Outside City Residential				
		10/1/2005	2	80,600	425.81
		11/1/2005	2	71,200	359.00
		12/1/2005	2	46,200	212.55
		1/1/2006	2	53,400	262.49
		2/1/2006	3	7,500	26.95
		3/1/2006	3	8,800	30.93
		4/1/2006	3	60,500	304.99
		5/1/2006	3	6,900	26.15
		6/1/2006	3	114,100	631.37
		7/1/2006	4	94,400	473.75
		8/1/2006	3	227,000	1,322.42
		9/1/2006	3	137,000	725.01
	Customer Class Total		*33*	*907,600*	*$4,801.42*
	Customer Class Average		*3*	*75,633*	*$400.12*
	Fiscal Year Total for All Classes		*31,146*	*4,610,741,350*	*$15,779,075.25*
	Fiscal Year Average for All Classes		*324*	*48,028,556*	*$164,365.37*
2004-05					
	Inside City Commercial				
		10/1/2004	2,086	302,780,200	965,351.00
		11/1/2004	2,087	222,624,300	738,025.32
		12/1/2004	2,022	115,908,600	391,381.00
		1/1/2005	2,029	101,292,700	344,034.58
		2/1/2005	2,053	87,446,700	299,367.25
		3/1/2005	2,062	87,495,300	299,792.94

FY	Customer Class	Date	Count	Consumption	Revenue
		4/1/2005	2,077	116,802,000	394,723.88
		5/1/2005	2,079	177,659,700	591,940.61
		6/1/2005	2,102	247,489,700	818,396.46
		7/1/2005	2,108	354,869,500	1,247,880.23
		8/1/2005	2,105	357,940,400	1,258,527.42
		9/1/2005	2,118	378,186,720	1,328,900.52
	Customer Class Total		*24,928*	*2,550,495,820*	*$8,678,321.21*
	Customer Class Average		*2,077*	*212,541,318*	*$723,193.43*
	Inside City Golf				
		10/1/2004	10	971,600	3,147.04
		11/1/2004	10	684,900	2,330.83
		12/1/2004	10	444,700	1,552.59
		1/1/2005	10	512,800	1,773.22
		2/1/2005	10	299,300	1,081.49
		3/1/2005	10	276,200	1,006.65
		4/1/2005	10	776,600	2,627.94
		5/1/2005	10	2,120,200	6,981.20
		6/1/2005	10	3,407,400	11,151.74
		7/1/2005	10	3,938,200	13,777.31
		8/1/2005	10	1,454,800	5,159.92
		9/1/2005	10	1,895,900	6,690.53
	Customer Class Total		*120*	*16,782,600*	*$57,280.46*
	Customer Class Average		*10*	*1,398,550*	*$4,773.37*
	Inside City Industrial				
		10/1/2004	1	17,417,000	49,345.88
		11/1/2004	1	14,714,000	41,558.73
		12/1/2004	1	7,792,000	22,038.69
		1/1/2005	1	6,654,000	18,829.53
		2/1/2005	1	9,051,000	25,589.07
		3/1/2005	1	8,836,000	24,982.77
		4/1/2005	1	8,211,000	23,220.27
		5/1/2005	1	8,733,900	24,694.85
		6/1/2005	1	13,727,100	38,775.67
		7/1/2005	1	16,549,000	50,870.68
		8/1/2005	1	14,193,000	43,637.76
		9/1/2005	1	16,601,000	51,030.32

FY	Customer Class	Date	Count	Consumption	Revenue
	Customer Class Total		*12*	*142,479,000*	*$414,574.22*
	Customer Class Average		*1*	*11,873,250*	*$34,547.85*
	Inside City MultiFamily				
		10/1/2004	99	32,363,300	85,105.11
		11/1/2004	136	27,530,600	73,161.10
		12/1/2004	215	23,946,900	64,862.36
		1/1/2005	214	17,706,500	48,649.95
		2/1/2005	216	16,296,400	44,943.32
		3/1/2005	216	16,925,400	46,717.72
		4/1/2005	216	29,340,200	78,802.45
		5/1/2005	218	53,688,300	142,162.14
		6/1/2005	223	76,040,000	200,288.56
		7/1/2005	221	115,850,300	329,276.88
		8/1/2005	219	121,432,800	344,981.50
		9/1/2005	221	122,173,800	347,092.44
	Customer Class Total		*2,414*	*653,294,500*	*$1,806,043.53*
	Customer Class Average		*201*	*54,441,208*	*$150,503.63*
	Inside City Residential				
		10/1/2004	25	747,500	3,664.01
		11/1/2004	26	636,600	3,231.21
		12/1/2004	29	313,500	1,522.90
		1/1/2005	29	345,300	1,690.50
		2/1/2005	29	294,900	1,449.08
		3/1/2005	27	281,800	1,368.21
		4/1/2005	28	510,100	2,618.73
		5/1/2005	30	969,200	5,191.95
		6/1/2005	30	1,055,000	5,604.17
		7/1/2005	31	1,628,800	9,160.81
		8/1/2005	33	1,258,900	6,779.38
		9/1/2005	34	1,812,700	10,127.30
	Customer Class Total		*351*	*9,854,300*	*$52,408.25*
	Customer Class Average		*29*	*821,192*	*$4,367.35*
	Outside City Commercial				
		10/1/2004	80	15,531,100	49,363.78
		11/1/2004	77	9,649,800	31,905.63
		12/1/2004	73	4,762,800	16,023.99
		1/1/2005	74	4,941,000	16,606.85

FY	Customer Class	Date	Count	Consumption	Revenue
		2/1/2005	70	2,664,800	9,186.48
		3/1/2005	70	1,505,300	5,437.69
		4/1/2005	70	3,880,300	13,124.72
		5/1/2005	70	7,053,800	23,406.87
		6/1/2005	71	8,050,700	26,640.84
		7/1/2005	74	12,193,100	42,893.10
		8/1/2005	72	10,846,000	38,197.67
		9/1/2005	73	12,827,500	45,094.97
	Customer Class Total		*874*	*93,906,200*	*$317,882.59*
	Customer Class Average		*73*	*7,825,517*	*$26,490.22*
	Outside City MultiFamily				
		10/1/2004	3	324,000	915.42
		11/1/2004	6	1,629,300	4,676.63
		12/1/2004	10	1,666,700	4,823.35
		1/1/2005	10	1,358,500	3,954.23
		2/1/2005	10	1,563,300	4,535.15
		3/1/2005	9	927,900	2,735.31
		4/1/2005	9	1,704,100	4,924.20
		5/1/2005	9	2,629,700	7,534.39
		6/1/2005	9	4,081,200	11,627.62
		7/1/2005	9	6,100,700	18,603.75
		8/1/2005	9	6,128,700	18,688.59
		9/1/2005	9	6,209,200	18,932.51
	Customer Class Total		*102*	*34,323,300*	*$101,951.15*
	Customer Class Average		*9*	*2,860,275*	*$8,495.93*
	Outside City Residential				
		10/1/2004	3	165,400	890.63
		11/1/2004	3	143,900	850.38
		12/1/2004	3	152,400	933.47
		1/1/2005	3	135,800	821.67
		2/1/2005	2	6,100	19.74
		3/1/2005	2	10,000	30.23
		4/1/2005	2	23,200	68.44
		5/1/2005	2	28,600	100.77
		6/1/2005	2	57,000	269.34
		7/1/2005	2	104,100	595.51
		8/1/2005	2	30,200	116.58

FY	Customer Class	Date	Count	Consumption	Revenue
		9/1/2005	2	110,700	633.44
	Customer Class Total		*28*	*967,400*	*$5,330.20*
	Customer Class Average		*2*	*80,617*	*$444.18*
	Fiscal Year Total for All Classes		*28,829*	*3,502,103,120*	*$11,433,791.61*
	Fiscal Year Average for All Classes		*300*	*36,480,241*	*$119,102.00*
2003-04					
	Inside City Commercial				
		10/1/2003	1,964	280,163,660	854,089.97
		11/1/2003	1,980	251,428,900	748,166.51
		12/1/2003	1,986	203,938,200	609,528.18
		1/1/2004	2,000	194,885,600	583,168.49
		2/1/2004	2,011	125,480,600	380,637.78
		3/1/2004	2,009	99,335,800	304,200.67
		4/1/2004	2,041	131,596,800	398,760.99
		5/1/2004	2,046	152,736,700	460,462.19
		6/1/2004	2,062	222,271,200	663,611.44
		7/1/2004	2,069	260,891,600	834,074.56
		8/1/2004	2,079	334,128,200	1,063,801.32
		9/1/2004	2,088	373,125,200	1,186,306.52
	Customer Class Total		*24,335*	*2,629,982,460*	*$8,086,808.62*
	Customer Class Average		*2,028*	*219,165,205*	*$673,900.72*
	Inside City Golf				
		10/1/2003	8	737,400	2,283.76
		11/1/2003	9	994,300	2,994.78
		12/1/2003	9	2,111,600	6,257.30
		1/1/2004	9	669,800	2,047.24
		2/1/2004	10	307,800	994.99
		3/1/2004	10	333,500	1,076.93
		4/1/2004	9	748,400	2,274.63
		5/1/2004	10	685,600	2,098.16
		6/1/2004	10	782,700	2,381.69
		7/1/2004	10	709,600	2,324.34
		8/1/2004	10	1,148,400	3,702.20
		9/1/2004	10	1,160,600	3,740.49
	Customer Class Total		*114*	*10,389,700*	*$32,176.51*
	Customer Class Average		*10*	*865,808*	*$2,681.38*

FY	Customer Class	Date	Count	Consumption	Revenue
	Inside City Industrial				
		10/1/2003	2	16,478,900	44,136.52
		11/1/2003	2	12,722,100	33,215.68
		12/1/2003	2	12,017,000	31,382.42
		1/1/2004	2	11,018,400	28,786.06
		2/1/2004	2	10,360,600	27,075.78
		3/1/2004	2	9,680,800	25,308.30
		4/1/2004	1	11,518,000	30,002.57
		5/1/2004	1	8,188,000	21,344.57
		6/1/2004	1	13,363,000	34,799.57
		7/1/2004	1	20,316,000	57,550.05
		8/1/2004	1	15,084,000	42,743.49
		9/1/2004	1	18,725,000	53,047.52
	Customer Class Total		*18*	*159,471,800*	*$429,392.53*
	Customer Class Average		*2*	*13,289,317*	*$35,782.71*
	Inside City MultiFamily				
		10/1/2003	76	24,107,300	60,278.96
		11/1/2003	76	19,249,300	46,371.68
		12/1/2003	76	15,890,800	38,411.98
		1/1/2004	76	13,188,500	32,012.39
		2/1/2004	76	7,912,100	19,504.62
		3/1/2004	78	7,745,000	19,118.17
		4/1/2004	81	12,067,400	29,380.03
		5/1/2004	91	15,238,500	36,991.13
		6/1/2004	91	23,666,600	56,979.52
		7/1/2004	94	28,296,700	74,477.57
		8/1/2004	95	38,360,300	100,646.96
		9/1/2004	96	39,770,500	104,331.58
	Customer Class Total		*1,006*	*245,493,000*	*$618,504.59*
	Customer Class Average		*84*	*20,457,750*	*$51,542.05*
	Inside City Residential				
		10/1/2003	16	471,800	2,310.35
		11/1/2003	19	533,200	2,660.53
		12/1/2003	20	411,100	1,989.45
		1/1/2004	20	460,400	2,256.18
		2/1/2004	19	88,600	265.97
		3/1/2004	21	153,600	675.41

FY	Customer Class	Date	Count	Consumption	Revenue
		4/1/2004	25	310,400	1,355.60
		5/1/2004	25	295,100	1,297.65
		6/1/2004	26	508,400	2,389.07
		7/1/2004	25	584,200	2,740.50
		8/1/2004	25	945,900	4,875.59
		9/1/2004	25	1,029,600	5,368.44
	Customer Class Total		*266*	*5,792,300*	*$28,184.74*
	Customer Class Average		*22*	*482,692*	*$2,348.73*
	Outside City Commercial				
		10/1/2003	83	14,703,000	41,328.45
		11/1/2003	83	10,488,000	31,232.53
		12/1/2003	82	8,338,700	24,951.76
		1/1/2004	82	9,571,100	28,550.40
		2/1/2004	76	6,794,700	20,401.77
		3/1/2004	77	6,636,800	19,980.91
		4/1/2004	76	7,949,500	23,787.84
		5/1/2004	76	7,474,500	22,400.83
		6/1/2004	76	12,856,900	38,117.45
		7/1/2004	79	13,552,000	43,145.17
		8/1/2004	80	19,499,900	61,830.09
		9/1/2004	80	19,801,800	62,779.33
	Customer Class Total		*950*	*137,666,900*	*$418,506.53*
	Customer Class Average		*79*	*11,472,242*	*$34,875.54*
	Outside City Golf				
		10/1/2003	1	35,400	102.66
		11/1/2003	1	17,900	57.05
		12/1/2003	1	33,200	101.72
		1/1/2004	1	15,300	49.46
	Customer Class Total		*4*	*101,800*	*$310.89*
	Customer Class Average		*1*	*25,450*	*$77.72*
	Outside City MultiFamily				
		10/1/2003	10	927,100	2,256.30
		11/1/2003	10	655,800	1,728.37
		12/1/2003	10	644,000	1,698.87
		1/1/2004	10	643,900	1,698.62
		2/1/2004	8	238,900	661.11
		3/1/2004	9	731,900	1,984.11

FY	Customer Class	Date	Count	Consumption	Revenue
		4/1/2004	9	375,500	1,020.71
		5/1/2004	3	122,500	333.91
		6/1/2004	3	262,400	683.66
		7/1/2004	3	274,100	778.70
		8/1/2004	4	533,300	1,492.93
		9/1/2004	4	444,800	1,250.45
	Customer Class Total		*83*	*5,854,200*	*$15,587.74*
	Customer Class Average		*7*	*487,850*	*$1,298.98*
	Outside City Residential				
		10/1/2003	2	45,400	193.43
		11/1/2003	2	35,300	139.17
		12/1/2003	3	53,000	199.08
		1/1/2004	3	53,200	200.32
		2/1/2004	3	23,900	84.83
		3/1/2004	3	202,900	1,139.94
		4/1/2004	3	191,300	1,112.61
		5/1/2004	3	193,100	1,128.95
		6/1/2004	3	215,400	1,199.18
		7/1/2004	3	200,400	1,102.02
		8/1/2004	3	245,900	1,373.72
		9/1/2004	3	187,400	1,019.34
	Customer Class Total		*34*	*1,647,200*	*$8,892.59*
	Customer Class Average		*3*	*137,267*	*$741.05*
	Fiscal Year Total for All Classes		*26,810*	*3,196,399,360*	*$9,638,364.74*
	Fiscal Year Average for All Classes		*268*	*31,963,994*	*$96,383.65*
2002-03					
	Inside City Commercial				
		10/1/2002	1,855	316,564,500	962,666.87
		11/1/2002	1,858	183,732,000	525,627.24
		12/1/2002	1,869	142,853,800	411,652.05
		1/1/2003	1,887	105,940,700	308,880.88
		2/1/2003	1,902	82,172,400	242,542.26
		3/1/2003	1,904	78,441,700	232,202.27
		4/1/2003	1,923	126,286,700	365,772.02
		5/1/2003	1,942	247,325,500	703,560.43
		6/1/2003	1,949	315,282,800	893,254.92

FY	Customer Class	Date	Count	Consumption	Revenue
		7/1/2003	1,953	336,253,700	1,022,350.02
		8/1/2003	1,954	369,757,600	1,122,889.14
		9/1/2003	1,965	416,904,200	1,264,492.45
	Customer Class Total		*22,961*	*2,721,515,600*	*$8,055,890.55*
	Customer Class Average		*1,913*	*226,792,967*	*$671,324.21*
	Inside City Golf				
		10/1/2002	7	7,611,400	22,931.68
		11/1/2002	7	1,433,100	4,077.58
		12/1/2002	7	1,687,000	4,785.96
		1/1/2003	7	1,715,500	4,865.48
		2/1/2003	7	1,085,200	3,106.94
		3/1/2003	7	145,200	484.34
		4/1/2003	7	1,169,400	3,341.85
		5/1/2003	7	1,149,000	3,284.94
		6/1/2003	9	1,097,600	3,152.11
		7/1/2003	9	1,347,600	4,132.61
		8/1/2003	9	2,085,200	6,345.41
		9/1/2003	9	1,272,700	3,907.91
	Customer Class Total		*92*	*21,798,900*	*$64,416.81*
	Customer Class Average		*8*	*1,816,575*	*$5,368.07*
	Inside City Industrial				
		10/1/2002	2	13,548,600	36,312.62
		11/1/2002	2	13,084,400	32,063.80
		12/1/2002	2	10,336,500	25,358.92
		1/1/2003	2	10,652,700	26,130.45
		2/1/2003	2	10,006,700	24,554.21
		3/1/2003	2	10,401,300	25,517.03
		4/1/2003	2	10,202,000	25,030.74
		5/1/2003	2	12,354,600	30,283.08
		6/1/2003	2	14,058,200	34,439.87
		7/1/2003	2	16,118,500	43,256.52
		8/1/2003	2	15,979,600	42,803.39
		9/1/2003	2	15,207,600	40,742.15
	Customer Class Total		*24*	*151,950,700*	*$386,492.78*
	Customer Class Average		*2*	*12,662,558*	*$32,207.73*
	Inside City MultiFamily				
		10/1/2002	46	14,380,200	35,996.72

FY	Customer Class	Date	Count	Consumption	Revenue
		11/1/2002	46	6,754,200	15,778.79
		12/1/2002	57	5,719,300	13,501.84
		1/1/2003	57	4,609,700	10,983.06
		2/1/2003	56	4,145,100	9,923.80
		3/1/2003	59	4,019,700	9,671.87
		4/1/2003	61	9,912,000	23,084.65
		5/1/2003	59	22,709,400	52,100.54
		6/1/2003	68	24,447,500	56,126.22
		7/1/2003	71	27,455,600	68,492.69
		8/1/2003	73	36,100,000	89,879.83
		9/1/2003	74	44,196,700	109,896.43
	Customer Class Total		*727*	*204,449,400*	*$495,436.44*
	Customer Class Average		*61*	*17,037,450*	*$41,286.37*
	Inside City Residential				
		12/1/2002	4	153,500	847.87
		1/1/2003	6	111,800	618.92
		2/1/2003	7	84,000	495.25
		3/1/2003	10	120,100	594.94
		4/1/2003	12	321,600	1,632.31
		5/1/2003	12	454,000	2,309.57
		6/1/2003	12	365,000	1,814.63
		7/1/2003	14	564,800	2,868.87
		8/1/2003	14	676,500	3,545.92
		9/1/2003	14	520,600	2,619.80
	Customer Class Total		*105*	*3,371,900*	*$17,348.08*
	Customer Class Average		*11*	*337,190*	*$1,734.81*
	Outside City Commercial				
		10/1/2002	84	22,692,700	63,490.64
		11/1/2002	83	11,116,000	28,644.79
		12/1/2002	81	7,791,800	20,263.34
		1/1/2003	82	5,018,800	13,282.11
		2/1/2003	82	4,544,700	12,077.68
		3/1/2003	82	4,322,200	11,521.56
		4/1/2003	84	7,701,300	20,043.64
		5/1/2003	83	18,518,400	47,293.82
		6/1/2003	82	19,235,200	49,091.28
		7/1/2003	84	21,588,700	60,437.04

FY	Customer Class	Date	Count	Consumption	Revenue
		8/1/2003	83	23,517,800	65,762.37
		9/1/2003	83	21,828,900	61,059.11
	Customer Class Total		*993*	*167,876,500*	*$452,967.38*
	Customer Class Average		*83*	*13,989,708*	*$37,747.28*
	Outside City Golf				
		10/1/2002	1	2,200	10.69
		11/1/2002	1	1,200	7.62
		12/1/2002	1	1,300	7.88
		1/1/2003	1	1,100	7.37
		2/1/2003	1	1,300	7.88
		3/1/2003	1	4,100	14.93
		4/1/2003	1	1,600	8.63
		5/1/2003	1	2,500	10.90
		6/1/2003	1	2,600	11.15
		7/1/2003	1	3,100	13.19
		8/1/2003	1	8,200	27.31
		9/1/2003	1	13,400	41.72
	Customer Class Total		*12*	*42,600*	*$169.27*
	Customer Class Average		*1*	*3,550*	*$14.11*
	Outside City MultiFamily				
		10/1/2002	9	1,174,600	2,817.71
		11/1/2002	9	828,400	1,833.65
		12/1/2002	9	870,100	1,922.46
		1/1/2003	9	492,300	1,117.75
		2/1/2003	10	183,600	477.96
		3/1/2003	10	327,900	785.32
		4/1/2003	10	894,400	1,991.96
		5/1/2003	10	1,807,300	3,936.44
		6/1/2003	10	1,588,100	3,469.55
		7/1/2003	10	1,750,400	4,182.82
		8/1/2003	10	1,883,900	4,495.22
		9/1/2003	10	1,411,100	3,388.87
	Customer Class Total		*116*	*13,212,100*	*$30,419.71*
	Customer Class Average		*10*	*1,101,008*	*$2,534.98*
	Outside City Residential				
		7/1/2003	1	7,300	15.32
		8/1/2003	2	86,500	429.68

FY	Customer Class	Date	Count	Consumption	Revenue
		9/1/2003	2	62,100	286.82
	Customer Class Total		5	155,900	$731.82
	Customer Class Average		2	51,967	$243.94
	Fiscal Year Total for All Classes		25,035	3,284,373,600	$9,503,872.84
	Fiscal Year Average for All Classes		258	33,859,522	$97,978.07
2001-02					
	Inside City Commercial				
		10/1/2001	1,696	300,322,940	841,316.46
		11/1/2001	1,701	234,645,030	666,790.28
		12/1/2001	1,718	145,371,400	417,738.01
		1/1/2002	1,724	81,513,800	239,670.36
		2/1/2002	1,730	95,882,760	279,782.08
		3/1/2002	1,743	107,283,800	311,643.97
		4/1/2002	1,756	199,088,140	567,846.72
		5/1/2002	1,761	214,159,700	609,993.79
		6/1/2002	1,779	344,356,050	973,307.45
		7/1/2002	1,790	320,059,400	971,133.86
		8/1/2002	1,802	291,819,600	888,152.60
		9/1/2002	1,824	378,441,700	1,148,193.80
	Customer Class Total		21,024	2,712,944,320	$7,915,569.38
	Customer Class Average		1,752	226,078,693	$659,630.78
	Inside City Golf				
		10/1/2001	7	1,864,300	5,236.52
		11/1/2001	6	867,800	2,482.15
		12/1/2001	6	301,100	901.05
		1/1/2002	6	419,700	1,231.94
		2/1/2002	6	488,500	1,423.90
		3/1/2002	6	192,500	598.06
		4/1/2002	7	1,607,700	4,593.62
		5/1/2002	7	6,147,400	17,230.46
		6/1/2002	7	4,133,500	11,611.69
		7/1/2002	7	338,600	1,378.97
		8/1/2002	6	1,553,900	4,722.68
		9/1/2002	6	14,717,700	44,232.33
	Customer Class Total		77	32,632,700	$95,643.37
	Customer Class Average		6	2,719,392	$7,970.28

FY	Customer Class	Date	Count	Consumption	Revenue
	Inside City Industrial				
		10/1/2001	2	659,600	1,752.02
		11/1/2001	2	718,700	1,891.49
		12/1/2001	2	754,800	1,979.57
		1/1/2002	2	1,063,900	2,733.78
		2/1/2002	2	4,306,500	10,645.72
		3/1/2002	2	13,883,900	34,014.58
		4/1/2002	2	13,967,200	34,217.83
		5/1/2002	2	16,588,700	40,614.29
		6/1/2002	2	12,182,100	29,862.18
		7/1/2002	2	13,247,700	35,500.38
		8/1/2002	2	13,841,200	37,093.86
		9/1/2002	2	13,354,500	35,794.38
	Customer Class Total		*24*	*104,568,800*	*$266,100.08*
	Customer Class Average		*2*	*8,714,067*	*$22,175.01*
	Inside City MultiFamily				
		10/1/2001	28	10,429,100	24,699.23
		11/1/2001	27	6,746,900	15,562.19
		12/1/2001	32	3,388,400	8,009.99
		1/1/2002	33	2,195,100	5,289.87
		2/1/2002	33	3,799,200	8,931.17
		3/1/2002	35	4,113,900	9,653.46
		4/1/2002	36	6,008,100	13,966.76
		5/1/2002	36	13,132,900	30,135.48
		6/1/2002	37	13,003,400	29,850.37
		7/1/2002	39	13,288,000	33,141.49
		8/1/2002	41	13,086,900	32,750.37
		9/1/2002	41	16,600,400	41,406.17
	Customer Class Total		*418*	*105,792,300*	*$253,396.55*
	Customer Class Average		*35*	*8,816,025*	*$21,116.38*
	Outside City Commercial				
		10/1/2001	71	12,961,600	35,464.21
		11/1/2001	69	10,818,500	27,835.60
		12/1/2001	71	7,074,500	18,408.57
		1/1/2002	70	4,170,000	11,056.88
		2/1/2002	79	7,696,800	19,999.15
		3/1/2002	78	7,366,800	19,160.11

FY	Customer Class	Date	Count	Consumption	Revenue
		4/1/2002	78	10,074,600	25,988.36
		5/1/2002	80	16,682,200	42,646.82
		6/1/2002	80	27,878,200	70,866.31
		7/1/2002	79	24,709,500	68,992.64
		8/1/2002	81	26,151,900	73,070.49
		9/1/2002	82	30,094,400	83,985.69
	Customer Class Total		*918*	*185,679,000*	*$497,474.83*
	Customer Class Average		*77*	*15,473,250*	*$41,456.24*
	Outside City Golf				
		10/1/2001	1	2,000	8.72
		11/1/2001	1	2,300	10.40
		12/1/2001	1	1,100	7.37
		1/1/2002	1	900	6.87
		2/1/2002	1	1,100	7.37
		3/1/2002	1	1,900	9.39
		4/1/2002	1	1,200	7.62
		5/1/2002	1	1,900	9.39
		6/1/2002	1	1,900	9.39
		7/1/2002	1	2,100	9.14
		8/1/2002	1	1,600	9.03
		9/1/2002	1	1,600	9.03
	Customer Class Total		*12*	*19,600*	*$103.72*
	Customer Class Average		*1*	*1,633*	*$8.64*
	Outside City MultiFamily				
		10/1/2001	2	436,000	1,009.44
		11/1/2001	2	237,000	514.01
		12/1/2001	2	50,500	116.76
		1/1/2002	3	57,400	138.19
		2/1/2002	3	62,900	149.91
		3/1/2002	3	203,800	450.03
		4/1/2002	3	176,400	391.66
		5/1/2002	3	262,700	575.48
		6/1/2002	9	906,300	1,999.56
		7/1/2002	9	901,800	2,166.31
		8/1/2002	9	1,056,200	2,540.66
		9/1/2002	9	1,371,700	3,278.93

FY	Customer Class	Date	Count	Consumption	Revenue
	Customer Class Total		*57*	*5,722,700*	*$13,330.94*
	Customer Class Average		*5*	*476,892*	*$1,110.91*
	Fiscal Year Total for All Classes		*22,530*	*3,147,359,420*	*$9,041,618.87*
	Fiscal Year Average for All Classes		*268*	*37,468,565*	*$107,638.32*
2000-01					
	Inside City Commercial				
		10/1/2000	1,533	211,029,200	512,524.96
		11/1/2000	1,548	160,920,400	427,362.92
		12/1/2000	1,550	96,613,200	259,825.50
		1/1/2001	1,565	69,112,300	188,359.48
		2/1/2001	1,533	73,790,300	200,243.31
		3/1/2001	1,577	58,976,700	162,028.53
		4/1/2001	1,602	78,022,380	211,654.60
		5/1/2001	1,621	129,869,600	346,629.99
		6/1/2001	1,632	232,023,600	612,193.09
		7/1/2001	1,638	313,117,300	876,265.47
		8/1/2001	1,660	423,719,300	1,182,872.79
		9/1/2001	1,664	370,184,670	1,034,497.27
	Customer Class Total		*19,123*	*2,217,378,950*	*$6,014,457.91*
	Customer Class Average		*1,594*	*184,781,579*	*$501,204.83*
	Inside City Golf				
		12/1/2000	3	266,600	734.38
		1/1/2001	7	353,100	990.47
		2/1/2001	7	338,300	951.99
		3/1/2001	7	155,200	475.93
		4/1/2001	6	135,600	400.93
		5/1/2001	7	1,285,200	3,437.97
		6/1/2001	7	1,474,800	3,906.89
		7/1/2001	7	9,405,600	26,125.91
		8/1/2001	6	2,646,300	7,387.71
		9/1/2001	7	19,154,300	53,144.78
	Customer Class Total		*64*	*35,215,000*	*$97,556.96*
	Customer Class Average		*6*	*3,521,500*	*$9,755.70*
	Inside City Industrial				
		10/1/2000	2	17,854,700	38,833.14
		11/1/2000	2	15,870,300	36,617.90

FY	Customer Class	Date	Count	Consumption	Revenue
		12/1/2000	2	15,836,400	36,539.93
		1/1/2001	2	5,030,000	11,685.21
		2/1/2001	2	10,609,200	24,517.37
		3/1/2001	2	10,769,600	24,886.29
		4/1/2001	2	10,369,000	23,964.91
		5/1/2001	2	14,847,900	34,266.38
		6/1/2001	2	17,486,800	40,335.85
		7/1/2001	2	17,178,000	42,717.65
		8/1/2001	2	17,857,500	44,402.81
		9/1/2001	2	2,371,100	5,996.54
	Customer Class Total		*24*	*156,080,500*	*$364,763.98*
	Customer Class Average		*2*	*13,006,708*	*$30,397.00*
	Inside City MultiFamily				
		10/1/2000	6	1,749,300	4,204.07
		11/1/2000	6	1,401,000	3,100.86
		12/1/2000	11	804,200	1,831.98
		1/1/2001	13	770,600	1,766.86
		2/1/2001	13	1,307,000	2,943.39
		3/1/2001	14	1,480,000	3,332.55
		4/1/2001	15	1,216,500	2,753.66
		5/1/2001	16	2,508,100	5,584.50
		6/1/2001	18	4,231,000	9,367.93
		7/1/2001	20	4,815,100	11,427.17
		8/1/2001	23	7,452,300	17,631.23
		9/1/2001	25	5,221,800	12,398.88
	Customer Class Total		*180*	*32,956,900*	*$76,343.08*
	Customer Class Average		*15*	*2,746,408*	*$6,361.92*
	Outside City Commercial				
		10/1/2000	63	15,607,600	35,570.31
		11/1/2000	63	6,756,600	17,286.56
		12/1/2000	70	4,507,300	11,697.15
		1/1/2001	69	4,863,400	12,584.08
		2/1/2001	67	3,053,600	8,032.83
		3/1/2001	70	2,625,700	7,024.25
		4/1/2001	68	4,018,300	10,446.81
		5/1/2001	72	9,013,200	23,000.02
		6/1/2001	72	16,028,000	40,527.77

FY	Customer Class	Date	Count	Consumption	Revenue
		7/1/2001	72	17,963,500	48,957.65
		8/1/2001	73	26,601,000	72,287.52
		9/1/2001	74	20,397,100	55,548.87
	Customer Class Total		*833*	*131,435,300*	*$342,963.82*
	Customer Class Average		*69*	*10,952,942*	*$28,580.32*
	Outside City Golf				
		1/1/2001	1	1,000	5.82
		2/1/2001	1	900	5.57
		3/1/2001	1	8,600	24.82
		4/1/2001	1	2,300	9.07
		5/1/2001	1	5,300	16.57
		6/1/2001	1	2,700	10.07
		7/1/2001	1	1,900	8.45
		8/1/2001	1	3,000	11.42
		9/1/2001	1	1,000	6.02
	Customer Class Total		*9*	*26,700*	*$97.81*
	Customer Class Average		*1*	*2,967*	*$10.87*
	Fiscal Year Total for All Classes		*20,233*	*2,573,093,350*	*$6,896,183.56*
	Fiscal Year Average for All Classes		*302*	*38,404,378*	*$102,928.11*
1999-00					
	Inside City Commercial				
		10/1/1999	1,360	446,062,800	1,070,770.22
		11/1/1999	1,376	324,014,100	780,495.62
		12/1/1999	1,380	236,435,660	572,086.59
		1/1/2000	1,360	160,481,900	391,144.02
		2/1/2000	1,396	135,119,000	331,169.32
		3/1/2000	1,429	132,458,000	325,049.36
		4/1/2000	1,447	136,721,700	335,149.99
		5/1/2000	1,463	161,749,600	394,835.73
		6/1/2000	1,466	240,830,300	583,212.00
		7/1/2000	1,492	270,566,100	654,163.20
		8/1/2000	1,499	262,521,500	634,927.87
		9/1/2000	1,517	293,980,620	709,959.39
	Customer Class Total		*17,185*	*2,800,941,280*	*$6,782,963.31*
	Customer Class Average		*1,432*	*233,411,773*	*$565,246.94*
	Inside City Industrial				

FY	Customer Class	Date	Count	Consumption	Revenue
		10/1/1999	2	17,791,300	38,695.56
		11/1/1999	2	14,129,400	30,749.24
		12/1/1999	2	13,105,100	28,526.51
		1/1/2000	2	11,620,000	25,303.84
		2/1/2000	2	10,965,900	23,884.44
		3/1/2000	2	10,911,700	23,766.83
		4/1/2000	2	12,832,400	27,934.75
		5/1/2000	2	13,205,600	28,744.59
		6/1/2000	2	18,016,100	39,183.38
		7/1/2000	2	19,388,800	42,162.14
		8/1/2000	2	19,744,500	42,934.01
		9/1/2000	2	20,745,100	45,105.31
	Customer Class Total		*24*	*182,455,900*	*$396,990.60*
	Customer Class Average		*2*	*15,204,658*	*$33,082.55*
	Inside City MultiFamily				
		11/1/1999	2	394,800	954.35
		12/1/1999	3	698,000	1,684.28
		1/1/2000	3	750,600	1,809.47
		2/1/2000	3	352,500	861.99
		3/1/2000	3	316,600	776.56
		4/1/2000	4	433,900	1,062.14
		5/1/2000	5	820,500	1,987.10
		6/1/2000	5	1,244,000	2,995.03
		7/1/2000	5	1,212,800	2,920.77
		8/1/2000	5	1,468,200	3,528.62
		9/1/2000	6	1,992,300	4,782.40
	Customer Class Total		*44*	*9,684,200*	*$23,362.71*
	Customer Class Average		*4*	*880,382*	*$2,123.88*
	Outside City Commercial				
		10/1/1999	51	19,422,200	44,041.76
		11/1/1999	50	16,933,200	38,437.60
		12/1/1999	51	18,748,500	42,555.25
		1/1/2000	50	8,603,100	19,699.08
		2/1/2000	53	6,079,000	14,094.66
		3/1/2000	55	5,843,400	13,550.46
		4/1/2000	55	8,061,900	18,542.09
		5/1/2000	60	10,869,700	24,904.18

FY	Customer Class	Date	Count	Consumption	Revenue
		6/1/2000	59	13,389,600	30,523.21
		7/1/2000	62	20,218,700	46,009.11
		8/1/2000	60	14,607,100	33,304.02
		9/1/2000	60	15,505,900	35,326.32
	Customer Class Total		*666*	*158,282,300*	*$360,987.74*
	Customer Class Average		*56*	*13,190,192*	*$30,082.31*
	Fiscal Year Total for All Classes		*17,919*	*3,151,363,680*	*$7,564,304.36*
	Fiscal Year Average for All Classes		*381*	*67,050,291*	*$160,942.65*
	Grand Total		*207,188*	*26,863,085,560*	*$82,085,432.68*

City of Austin
Issue Paper #6: Rates for Irrigation Customers

SECTION

C

Example of Bill Calculations for Irrigation Rates

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Typical Monthly Bills at Various Consumption Levels

5/8" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$49.30	$240.05	$392.65	$697.85	$3,749.85	$7,564.85	$38,084.85
Multifamily	57.40	144.15	213.55	352.35	1,740.35	3,475.35	17,355.35
Commercial	68.05	172.55	256.15	423.35	2,095.35	4,185.35	20,905.35
Industrial	63.10	159.35	236.35	390.35	1,930.35	3,855.35	19,255.35
Proposed Irrigation	119.80	310.55	463.15	768.35	3,820.35	7,635.35	38,155.35

Typical Monthly Bills at Various Consumption Levels
3/4" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$50.20	$240.95	$393.55	$698.75	$3,750.75	$7,565.75	$38,085.75
Multifamily	58.30	145.05	214.45	353.25	1,741.25	3,476.25	17,356.25
Commercial	68.95	173.45	257.05	424.25	2,096.25	4,186.25	20,906.25
Industrial	64.00	160.25	237.25	391.25	1,931.25	3,856.25	19,256.25
Proposed Irrigation	120.70	311.45	464.05	769.25	3,821.25	7,636.25	38,156.25

Typical Monthly Bills at Various Consumption Levels

1" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$51.46	$242.21	$394.81	$700.01	$3,752.01	$7,567.01	$38,087.01
Multifamily	59.56	146.31	215.71	354.51	1,742.51	3,477.51	17,357.51
Commercial	70.21	174.71	258.31	425.51	2,097.51	4,187.51	20,907.51
Industrial	65.26	161.51	238.51	392.51	1,932.51	3,857.51	19,257.51
Proposed Irrigation	121.96	312.71	465.31	770.51	3,822.51	7,637.51	38,157.51

Typical Monthly Bills at Various Consumption Levels
1 1/4" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$53.26	$244.01	$396.61	$701.81	$3,753.81	$7,568.81	$38,088.81
Multifamily	61.36	148.11	217.51	356.31	1,744.31	3,479.31	17,359.31
Commercial	72.01	176.51	260.11	427.31	2,099.31	4,189.31	20,909.31
Industrial	67.06	163.31	240.31	394.31	1,934.31	3,859.31	19,259.31
Proposed Irrigation	123.76	314.51	467.11	772.31	3,824.31	7,639.31	38,159.31

Typical Monthly Bills at Various Consumption Levels
1 1/2" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$55.06	$245.81	$398.41	$703.61	$3,755.61	$7,570.61	$38,090.61
Multifamily	63.16	149.91	219.31	358.11	1,746.11	3,481.11	17,361.11
Commercial	73.81	178.31	261.91	429.11	2,101.11	4,191.11	20,911.11
Industrial	68.86	165.11	242.11	396.11	1,936.11	3,861.11	19,261.11
Proposed Irrigation	125.56	316.31	468.91	774.11	3,826.11	7,641.11	38,161.11

Typical Monthly Bills at Various Consumption Levels

2" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$58.66	$249.41	$402.01	$707.21	$3,759.21	$7,574.21	$38,094.21
Multifamily	66.76	153.51	222.91	361.71	1,749.71	3,484.71	17,364.71
Commercial	77.41	181.91	265.51	432.71	2,104.71	4,194.71	20,914.71
Industrial	72.46	168.71	245.71	399.71	1,939.71	3,864.71	19,264.71
Proposed Irrigation	129.16	319.91	472.51	777.71	3,829.71	7,644.71	38,164.71

Typical Monthly Bills at Various Consumption Levels

3" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$74.50	$265.25	$417.85	$723.05	$3,775.05	$7,590.05	$38,110.05
Multifamily	82.60	169.35	238.75	377.55	1,765.55	3,500.55	17,380.55
Commercial	93.25	197.75	281.35	448.55	2,120.55	4,210.55	20,930.55
Industrial	88.30	184.55	261.55	415.55	1,955.55	3,880.55	19,280.55
Proposed Irrigation	145.00	335.75	488.35	793.55	3,845.55	7,660.55	38,180.55

Typical Monthly Bills at Various Consumption Levels
4" Meter

	Consumption (Kgal)						
Description	15	40	60	100	500	1,000	5,000
Single-family Residential	$92.50	$283.25	$435.85	$741.05	$3,793.05	$7,608.05	$38,128.05
Multifamily	100.60	187.35	256.75	395.55	1,783.55	3,518.55	17,398.55
Commercial	111.25	215.75	299.35	466.55	2,138.55	4,228.55	20,948.55
Industrial	106.30	202.55	279.55	433.55	1,973.55	3,898.55	19,298.55
Proposed Irrigation	163.00	353.75	506.35	811.55	3,863.55	7,678.55	38,198.55

City of Austin
Issue Paper #6: Rates for Irrigation Customers

SECTION

D

Executive Team Revised Evaluation Criteria Memorandum

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

D. Executive Team Revised Evaluation Criteria Memorandum

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

MEMORANDUM

To: Austin Water Utility Executive Team **Date:** December 28, 2007

From: Red Oak Consulting

Re: Revised Evaluation Criteria

Introduction

The Austin Water Utility (AWU) retained Red Oak Consulting (Red Oak) to conduct a water and wastewater cost-of-service rate study. An important tool for analyzing and recommending appropriate alternatives or policies is to have an objective set of evaluation criteria that meets AWU's needs.

During our recent meeting with AWU, Red Oak presented a list of preliminary evaluation criteria. During the presentation, AWU revised the criteria to better meet the needs of the citizens of Austin. This memorandum presents an overview of the selected evaluation criteria.

Description of Evaluation Criteria

The evaluation criteria are organized into five categories. These categories include:

- Implementation,
- Equity,
- Customer impact,
- Conservation, and
- Financial.

The following table presents these categories and the revised criteria within those categories.

Implementation	Equity	Customer	Conservation	Financial
Administrative Burden	Interclass	Affordability	Average-Day Savings	Revenue Sufficiency
Public Understanding	Intraclass	Economic Development	Peak-Season Savings	Revenue Stability
Public and Political Acceptance	Inter-generational	Rate Shock/ Volatility	Peak-Day Savings	Rate Stability
Risk of Implementation	Inside/ Outside City	Understand Bill	Sustainability	Rate Predictability
Legal Defensibility	Industry Standards			Financial Risk
Policy Durability				

Following is a brief description of each criterion by category.

Implementation

Criteria included in the implementation category are designed to compare the issues of implementing alternatives. Due to the nature of the criteria within this category, and the lack of an appropriate quantitative measure tool for many of them, these criteria are evaluated qualitatively.

Administrative Burden

The amount of administrative burden required can vary greatly among alternatives. Additional data collection needs, changes to the accounting and budgeting system, or additional staff needs and training are a few examples of how administrative burden among alternatives can differ.

Public Understanding

The public's ability to understand alternatives, the process by which they were developed, and the resulting cost consequences are imperative for successful implementation.

Public and Political Acceptance

The selected alternative should be one the public and the City's elected officials will accept. Acceptance of a new alternative is typically tied to community values and goals. This criterion typically requires gathering information on likely customer responses and the involvement of elected officials.

Risk of Implementation

The success of implementing any new alternative involves a degree of risk. The selected alternative should minimize risk that it may not be able to be implemented or can only be implemented outside an acceptable timeframe.

Legal Defensibility

The proposed alternative must be legally defensible if challenged.

Policy Durability

The proposed alternative should remain viable as the utility's situation changes over time. Policies that are more likely to fair well considering an uncertain future are considered relatively more durable and receive a higher rating for *Policy Durability*.

Equity

Interclass Equity

This type of equity assures that the alternative distributes the costs of services across customer classes in proportion to the cost of serving each class. Each customer class pays its fair share and no class provides or receives a subsidy from another class.

Intraclass Equity

This type of equity recognizes that alternatives will vary in their ability to assign costs to customers equitably within the same customer class.

Intergenerational Equity

This type of equity recognizes that alternatives will vary in the degree which they compensate existing customers for investments already made in the system that will benefit new customers. Usually, intergenerational equity is managed by implementing appropriate system development charge methodologies.

Inside/Outside City

This type of equity measures the proportionality of costs to revenue for inside- and outside-city customers.

Industry Standards

Industry standards have evolved to ensure the integrity of the cost-of-service process. The standards focus largely on ensuring proportionality of costs and revenue. These industry standards may guide the selection of alternatives.

Customer Impact

The customer impacts focus on the affects of an alternative on customers. Some criteria are very subjective and often require the direct participation of policymakers. Others, (e.g., rate shock), can be measured quantitatively.

Affordability

In addition to promoting the health, general welfare, and fire protection needs of its customers, many utilities were formed by local governments to ensure that a minimum level of service is available to users who might not otherwise be able to afford them. This criterion focuses on the ability of residential customers to afford services.

Economic Development

Water and sewer services are vital to local economic development. Also, local businesses are often affected by the cost of utility services. This criterion measures the relative impacts on economic development of the alternatives.

Rate Shock/Volatility

Rate shock measures the significance of changes in customer bills because of a proposed alternative. Large, sudden increases in bills can impose economic difficulties that are harmful to local governments, businesses, and residents.

Understandability of Bill

Public understanding of the service bill is an important criterion to consider when examining the likely customer impact of alternatives. Specifically, this criterion is tied to the complexity of the bill. Simpler rate designs will likely generate bills that are easier to read and understand by customers.

Conservation

Water savings is often a primary objective of modern rate designs. However, water savings can accumulate differently based on the type of rate structure selected. Therefore, the conservation criteria are selected to measure the types of water savings most important to AWU.

Often conservation criteria are considered to apply exclusively to water, and generally the criteria are more relevant to water. In some circumstances, however, conservation of water will reduce the cost of wastewater treatment.

Average-Day Savings

Some policies provide conservation incentives regardless of the time of year. These policies are best suited to reducing a utility’s average-day water savings. These policies generally have greater impacts on wastewater flows than the criteria that include a focus on peaking. This criterion measures the reduction in average-day demands.

Peak-Season Savings

A commonly used criterion is the reduction in peak usage because reducing peak demands often results in a reduction in long-term capital costs. One factor driving the sizing of certain parts of a water system is peak-season demands. Policies that affect the amount of outdoor water use can impact peak-season savings.

Peak-Day Savings

Like peak-season savings, reduction in peak-day demands can also result in reductions of long-term capital costs.

Sustainability

The proposed alternative should promote the sustainability of the region's resources. Again, this may relate to promoting efficiency by the selected alternative, or in by the extent which growth is required to pay for itself.

Financial

Revenue Sufficiency

The proposed alternative needs to provide sufficient revenues to meet AWU's capital-related revenue requirements (i.e., fund the capital projects needs of AWU.) All alternatives proposed in this study will generate sufficient revenues for the utilities in the long run. However, the amount of system development fees generated as a source of revenues will vary between alternatives. Some alternatives may require additional revenues from rates to meet AWU's capital plan. Also this criterion measures the impact of assumptions on AWU's service expansion policies.

Revenue Stability

The proposed alternative should minimize fluctuations in revenues due to changes in growth or other factors outside the control of AWU. This criterion measures the degree of volatility in resulting revenues from a propose alternative.

Rate Stability

Rate stability measures the volatility in the rates from year to year. A more stable rate increases at a steady pace and avoids large, one-time adjustments. Customers have a difficult time adjusting their budgets when rates are unstable.

Rate Predictability

The proposed alternative should minimize the unpredictability in the total bill and fee. A customer will have a hard time predicting his/her bill and fees in the future if changes in use cause significant changes in the total bill. In contrast to the revenue sufficiency criterion, where the criterion is evaluated from the point of view of the utility, this criterion is evaluated from a customer's perspective.

Financial Risk

Notably for growth-related improvements, AWU takes on financial risk when anticipating growth and the expectation that new customers will connect to its systems, thereby helping to fund the improvements. The proposed alternative should minimize the risk AWU incurs when adding new infrastructure to its systems.

City of Austin
Issue Paper #6: Rates for Irrigation Customers

SECTION

E

Evaluation of Alternatives

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

Evaluations Based on Average Ratings
Use of Excess Revenues from Irrigation Rates

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Reduce Rate for Indoor Use for Irrigation Customers	███	████	██████	███	██████	██████
Reduce Rates for All Customers	█████	█████	████	██████	███	███
Set Irrigation Rate at Cost of Service	███	████	█████	████	████████	██████
Set Excess Revenues Aside	█████	██████	████	██████	█████	█████
No Irrigation Rate (Current)	███████	███████	███	████████	████████	███
Weights	████	█████	█████	████	█████	█████

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Reduce Rate for Indoor Use for Irrigation Customers	██████	████	█████	█████	██████	
Reduce Rates for All Customers	███	███	█████	█████	████	
Set Irrigation Rate at Cost of Service	███████	███████	█████	█████	██████	
Set Excess Revenues Aside	████	████	███	█████	████	
No Irrigation Rate (Current)	██████	██████	█████	█████	███████	
Weights	█████	█████	████	████	████	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Reduce Rate for Indoor Use for Irrigation Customers	█████	█████	████	█████		
Reduce Rates for All Customers	███████	███	███	█████		
Set Irrigation Rate at Cost of Service	█████	█████	█████	█████		
Set Excess Revenues Aside	██████	█████	███	█████		
No Irrigation Rate (Current)	█████	█████	███████	█████		
Weights	██████	████	█████	████		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Reduce Rate for Indoor Use for Irrigation Customers	█████	██████	██████	██████		
Reduce Rates for All Customers	█████	█████	█████	█████		
Set Irrigation Rate at Cost of Service	█████	█████	█████	█████		
Set Excess Revenues Aside	█████	███████	███████	███████		
No Irrigation Rate (Current)	█████	███	███	███		
Weights	█████	████	██████	██████		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Reduce Rate for Indoor Use for Irrigation Customers	█████	████	█████	█████	████	
Reduce Rates for All Customers	█████	████	█████	█████	████	
Set Irrigation Rate at Cost of Service	█████	█████	█████	█████	█████	
Set Excess Revenues Aside	███████	███████	██████	█████	███████	
No Irrigation Rate (Current)	█████	██████	█████	█████	██████	
Weights	███████	██████	██████	██████	██████	

Alternatives	**Weighted Average Score**
Reduce Rate for Indoor Use for Irrigation Customers	██████████
Reduce Rates for All Customers	█████████
Set Irrigation Rate at Cost of Service	██████████
Set Excess Revenues Aside	███████████
No Irrigation Rate (Current)	██████████

Average Ratings
Use of Excess Revenues from Irrigation Rates

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Reduce Rate for Indoor Use for Irrigation Customers	3.0	4.0	5.9	3.0	5.9	5.9
Reduce Rates for All Customers	4.9	4.9	4.0	5.9	3.0	3.0
Set Irrigation Rate at Cost of Service	3.0	4.0	4.9	4.0	7.9	5.9
Set Excess Revenues Aside	4.9	5.9	4.0	5.9	4.9	4.9
No Irrigation Rate (Current)	6.9	6.9	3.0	7.9	7.9	3.0
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Reduce Rate for Indoor Use for Irrigation Customers	5.9	4.0	4.9	4.9	5.9	
Reduce Rates for All Customers	3.0	3.0	4.9	4.9	4.0	
Set Irrigation Rate at Cost of Service	6.9	6.9	4.9	4.9	5.9	
Set Excess Revenues Aside	4.0	4.0	3.0	4.9	4.0	
No Irrigation Rate (Current)	5.9	5.9	4.9	4.9	6.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Reduce Rate for Indoor Use for Irrigation Customers	4.9	4.9	4.0	4.9		
Reduce Rates for All Customers	6.9	3.0	3.0	4.9		
Set Irrigation Rate at Cost of Service	4.9	4.9	4.9	4.9		
Set Excess Revenues Aside	5.9	4.9	3.0	4.9		
No Irrigation Rate (Current)	4.9	4.9	6.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Reduce Rate for Indoor Use for Irrigation Customers	4.9	5.9	5.9	5.9		
Reduce Rates for All Customers	4.9	4.9	4.9	4.9		
Set Irrigation Rate at Cost of Service	4.9	4.9	4.9	4.9		
Set Excess Revenues Aside	4.9	6.9	6.9	6.9		
No Irrigation Rate (Current)	4.9	3.0	3.0	3.0		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Reduce Rate for Indoor Use for Irrigation Customers	4.9	4.0	4.9	4.9	4.0	
Reduce Rates for All Customers	4.9	4.0	4.9	4.9	4.0	
Set Irrigation Rate at Cost of Service	4.9	4.9	4.9	4.9	4.9	
Set Excess Revenues Aside	6.9	6.9	5.9	4.9	6.9	
No Irrigation Rate (Current)	4.9	5.9	4.9	4.9	5.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
Reduce Rate for Indoor Use for Irrigation Customers	590
Reduce Rates for All Customers	531
Set Irrigation Rate at Cost of Service	619
Set Excess Revenues Aside	647
No Irrigation Rate (Current)	625

Evaluations Based on Average Ratings

Appropriate Level for Irrigation Rates

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Highest Residential Block Rate	██████	█████	███████	█████	████	█████
Cost of Service	████	████	█████	████	███████	██████
No Irrigation Rate	███████	█████	███	███████	██████	███
Weights	████	█████	█████	████	█████	█████

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Highest Residential Block Rate	███	███	█████	█████	███	
Cost of Service	███████	███████	█████	█████	███████	
No Irrigation Rate	█████	█████	█████	█████	█████	
Weights	█████	█████	████	████	████	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Highest Residential Block Rate	██████	████	███	█████		
Cost of Service	█████	█████	████	█████		
No Irrigation Rate	████	██████	██████	█████		
Weights	██████	████	█████	████		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Highest Residential Block Rate	█████	███████	███████	███████		
Cost of Service	█████	██████	██████	██████		
No Irrigation Rate	█████	████	████	████		
Weights	█████	████	██████	██████		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Highest Residential Block Rate	█████	████	████	█████	████	
Cost of Service	█████	█████	█████	█████	█████	
No Irrigation Rate	█████	██████	██████	█████	██████	
Weights	███████	██████	██████	██████	██████	

Alternatives	**Weighted Average Score**
Highest Residential Block Rate	██████████
Cost of Service	██████████
No Irrigation Rate	██████████

Average Ratings
Appropriate Level for Irrigation Rates

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Highest Residential Block Rate	5.9	4.9	6.9	4.9	3.9	4.9
Cost of Service	3.9	3.9	4.9	3.9	6.9	5.9
No Irrigation Rate	6.9	4.9	2.9	6.9	5.9	2.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Highest Residential Block Rate	2.9	2.9	4.9	4.9	2.9	
Cost of Service	6.9	6.9	4.9	4.9	6.9	
No Irrigation Rate	4.9	4.9	4.9	4.9	4.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Highest Residential Block Rate	5.9	3.9	2.9	4.9		
Cost of Service	4.9	4.9	3.9	4.9		
No Irrigation Rate	3.9	5.9	5.9	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Highest Residential Block Rate	4.9	6.9	6.9	6.9		
Cost of Service	4.9	5.9	5.9	5.9		
No Irrigation Rate	4.9	3.9	3.9	3.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Highest Residential Block Rate	4.9	3.9	3.9	4.9	3.9	
Cost of Service	4.9	4.9	4.9	4.9	4.9	
No Irrigation Rate	4.9	5.9	5.9	4.9	5.9	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
Highest Residential Block Rate	577
Cost of Service	629
No Irrigation Rate	594

Evaluations Based on Average Ratings

Single-family Residential Irrigation Blocks

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Provide Block 1 and 2 Discounted Water (Current)						
Price All Irrigation Water at Block 3 and Above						
Weights						

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Provide Block 1 and 2 Discounted Water (Current)						
Price All Irrigation Water at Block 3 and Above						
Weights						

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Provide Block 1 and 2 Discounted Water (Current)						
Price All Irrigation Water at Block 3 and Above						
Weights						

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Provide Block 1 and 2 Discounted Water (Current)						
Price All Irrigation Water at Block 3 and Above						
Weights						

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Provide Block 1 and 2 Discounted Water (Current)						
Price All Irrigation Water at Block 3 and Above						
Weights						

Alternatives	**Weighted Average Score**
Provide Block 1 and 2 Discounted Water (Current)	
Price All Irrigation Water at Block 3 and Above	

Average Ratings
Single-family Residential Irrigation Blocks

	Implementation					
Alternatives	**Administrative Burden**	**Public Understanding**	**Public and Political Acceptance**	**Risk of Implementation**	**Legal Defensibility**	**Policy Durability**
Provide Block 1 and 2 Discounted Water (Current)	5.9	5.9	3.0	4.9	4.9	3.0
Price All Irrigation Water at Block 3 and Above	4.0	4.9	6.9	4.9	4.9	6.9
Weights Rated from 0 to 10 (10 most important)	4.0	5.2	5.2	4.0	4.8	4.8

	Equity					
Alternatives	**Interclass**	**Intraclass**	**Inter-generational**	**Inside/ Outside City**	**Industry Standards**	
Provide Block 1 and 2 Discounted Water (Current)	4.9	3.0	4.9	4.9	3.0	
Price All Irrigation Water at Block 3 and Above	4.9	5.9	4.9	4.9	5.9	
Weights Rated from 0 to 10 (10 most important)	5.3	4.9	4.1	3.6	4.0	

	Customer					
Alternatives	**Affordability**	**Economic Development**	**Rate Shock/ Volatility**	**Understand Bill**		
Provide Block 1 and 2 Discounted Water (Current)	5.9	4.9	5.9	4.9		
Price All Irrigation Water at Block 3 and Above	4.9	4.9	4.0	4.9		
Weights Rated from 0 to 10 (10 most important)	5.8	4.1	4.6	3.9		

	Conservation					
Alternatives	**Average-Day Savings**	**Peak-Season Savings**	**Peak-Day Savings**	**Sustainability**		
Provide Block 1 and 2 Discounted Water (Current)	4.9	4.0	4.0	4.0		
Price All Irrigation Water at Block 3 and Above	4.9	6.9	6.9	6.9		
Weights Rated from 0 to 10 (10 most important)	4.8	4.5	5.9	5.6		

	Financial					
Alternatives	**Revenue Sufficiency**	**Revenue Stability**	**Rate Stability**	**Rate Predictability**	**Financial Risk**	
Provide Block 1 and 2 Discounted Water (Current)	4.9	5.9	4.9	4.9	5.9	
Price All Irrigation Water at Block 3 and Above	4.9	4.0	4.9	4.9	4.0	
Weights Rated from 0 to 10 (10 most important)	6.7	6.3	5.9	5.9	6.1	

Alternatives	**Weighted Average Score**
Provide Block 1 and 2 Discounted Water (Current)	571
Price All Irrigation Water at Block 3 and Above	632

APPENDIX

A

Executive Team Briefing Minutes

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

A. Executive Team Briefing Minutes

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #1

Meeting Location: City of Austin Waller Creek Center

Date & Time: November 27, 2007; 2:15 p.m.

Attendees: David Anders, Mike Castillo, Rusty Cobern, Darrel Culberson, Rick Giardina, Jennifer Ivey, Jimmy Jackson, Robena Jackson, Paul Matthews, Denise McDonald, Greg Meszaros, Charles Schoening,

The following is a summary of the meeting notes from the Executive Team Briefing PIC Meeting #1 which was held on November 21, 2007. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

- Ground rules need to provide process for public participation.
- City would like sign n sheet for public comment period. Public will be allowed to ask questions.
- PIC members should designate alternatives in advance of workshop if unable to attend.
- PIC member should provide comments from workshop to Mike Castillo within five days of workshop.
- Red Oak will poll attendees' experience with cost-of-services studies.
- Red Oak will provide references to M1 and WEF manuals as appropriate for PIC members' education.
- Red Oak will provide a memo to PIC members to explain the evaluation criteria selected by the Executive Team.
- Red Oak will ask PIC members' preference for PIC workshop on Mondays or Tuesdays. Executive Team briefings will be held on Tuesday morning.
- The City will provide the website link to the PIC members. Red Oak will inform PIC member that all comments will be posted on the website for public information.

- Robena Jackson will capture areas of agreements at the end of each workshop.
- City would like issue papers to address impact to the customer classes where appropriate.
- End each PIC workshop presentation with a slide showing the date and topic for the next workshop.
- Each PIC workshop should begin by addressing PIC members' comments and any executive deemed decisions that have been made since the previous workshop.
- The Executive Team will not provide written response to PIC members comments unless a request for information has been made.

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #2

Meeting Location: City of Austin Waller Creek Center

Date & Time: December 18, 2007; 9:30 a.m.

Attendees: Greg Meszaros, David Anders, Rusty Cobern, Mike Castillo, Robena Jackson, Jennifer Ivey, Paul Matthews, Charles Schoening,

The following is a summary of the meeting notes from the Executive Team Briefing PIC Meeting #2 which was held on December 18, 2007. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

- Robena Jackson presented the draft Public Involvement Plan. Comments should be submitted to Robena. The final Public Involvement Plan will be distributed to the PIC with the Water Cost Allocations and Fire Charges Issue Paper on December 31, 2007.

- The Executive Team is considering interim briefings to the City Council and the Water and Wastewater Commission, possibly in March 2008.

- The Executive Team proposes a "model workshop" to allow the PIC members to view the model and request what if scenarios from the consultant. The model workshop would be held in late spring upon completion of the model. The model will not be released to the PIC members for their use.

- The water and wastewater cost allocation methodologies workshop will be separated into two workshops. The water cost allocation methodologies will be presented with fire charges at the January 7, 2008, workshop. The wastewater cost allocation methodologies will be presented with inflow/infiltration allocation methodologies at the January 22, 2008, workshop. The revised workshop schedule is as follows:

    - November 27, 2007 – PIC Orientation

    - December 17, 2007 – Revenue Requirements

- January 7, 2008 – Water Cost Allocation Methodologies and Fire Charges
- January 22, 2008 – Wastewater Cost Allocation and Inflow/Infiltration Allocation Methodologies
- February 4, 2008 – Composition of Industrial Class Workshop
- February 19, 2008 – Rate Design Workshop 1
- March 3, 2008 – Rate Design Workshop 2
- March 17, 2008 – Available if needed
- March 31, 2008 – Available if needed

- The consultant will evaluate the addition of fire charges to the rate structure. The Executive Team likes the addition of another source of fixed revenue, especially with the increase in conservation. Also, new high-rise residential developments in the downtown area have increased the required fire flow significantly, but the associated costs are not being recovered because the volume used by these customers is reduced due to low-flow fixtures.

- The Executive Team will not solicit metered data from customers for use by the consultant. There is no way for the Utility to control the quality of this data. Also, this level of detailed data is not available for all customer classes. Therefore the peaking factors cannot be calculated consistently for all customer classes.

- The Executive Team added "Policy Durability" to the list of evaluation criteria to represent the ability of the methodologies chosen to continue to be relevant and applicable for the next several years.

- The Executive Team rated the evaluation criteria individually. The consultant will compile the ratings to determine the Executive Team's evaluation criteria weighting factors for use throughout the study.

- For future issue papers, the consultant will identify the current policy being used by the Utility. The first alternative will be the status quo. This will be designated in parentheses next to the alternative. The recommended alternative will also be designated in parentheses. The status quo and recommended alternatives will also be designated in the Powerpoint presentation.

- The first issue in the Water Cost Allocations and Fire Charges Issue Paper is Base – Extra Capacity vs. Commodity – Demand. The Utility is currently using the

Base – Extra Capacity methodology for water cost allocations. The consultant will provide background information about how peaking factors influence cost allocations for each methodology.

- The residents of Austin voted in May 1998 to authorize a $65 million bond issue for Water Quality Protection Lands to protect the Edwards Aquifer (Proposition 21). Since customers outside the city did not vote, the Mayor promised that the costs associated with this bond issue would not be allocated to outside city customers. Therefore, these costs will only be allocated to inside city retail customers.

- Wholesale customers currently pay their portion of LCRA costs for raw water. The Utility is revising the wholesale contracts as they are renegotiated to require wholesale customers to purchase their raw water directly from LCRA. Therefore wholesale customers will no longer pay a portion of the LCRA costs once their wholesale contracts are renegotiated and this requirement is added.

- The Utility currently has 22 wholesale customers – 11-12 are water only, 7-8 are water and wastewater, and 3 are wastewater only.

- The previous cost-of-service study defined transmission lines as greater than 24-inch. The Executive Team would like to evaluate alternatives for distinguishing between transmission and distribution lines.

- The Executive Team would like to consider individual rates for industrial customers. The consultant will evaluate this alternative and also adjusting the industrial class so it is better defined.

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REDOAK CONSULTING
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MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #3

Meeting Location: City of Austin Waller Creek Center

Date & Time: January 8, 2008; 9:30 a.m.

Attendees: Greg Meszaros, David Anders, Rusty Cobern, Mike Castillo, Daryl Slusher, Perwez Moheet, Jennifer Ivey, Paul Matthews, Charles Schoening

The following is a summary of the meeting notes from the Executive Team Briefing which was held on January 8, 2008. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

Revenue Requirements Issue #1

- The Executive Team decided to use the cash basis to calculate revenue requirements.

Revenue Requirements Issue #2

- Since the Utility submits annual budgets that are approved by the City Council, it is not feasible to use a historical test year that is adjusted for known and measurable changes. This might result in revenue requirements that are less than the approved Utility budget.

- The Executive Team decided to use future budgets to calculate revenue requirements.

Revenue Requirements Issues #3-5

- The remaining issues are not relevant since the Executive Team chose to use the cash basis to calculate revenue requirements.

Other Discussion Items

- The Utility can provide Red Oak with a functional breakdown of the CWIP.

- The Utility will identify assets that are related to Proposition 2 so they can be allocated to inside city retail customers only.

- Red Oak will evaluate the option of applying the Proposition 2 debt service payments to the fixed charges instead of to the volume charges. This may not be feasible because the fixed charges are based on meter size and not customer class.

- Red Oak proposed a sensitivity analysis using Monte Carlo analysis to determine the impacts of the study assumptions. This analysis can be added to the cost-of-service model. However, the Utility would like to keep the model simple and deterministic so if a sensitivity analysis is performed, it may need to remain a separate spreadsheet. The decision to add a sensitivity analysis will be delayed until later in the project.

- The issue of marginal costs has been raised by the residential class and is likely to remain an issue. Red Oak will evaluate rate structure alternatives that can recognize economies of scale.

- The Executive Team will defer their decision regarding public fire costs until after the rate design workshop. Red Oak will design a rate structure alternative with fixed fire charges and one without for comparison of impacts to utility bills.

- The Executive Team would like to consider implementing a “lifeline” rate for low income customers. Red Oak will evaluate the use of pressure zone-based rates to indirectly provide a “lifeline” rate. This would also support the City’s Climate Change and Desired Development Zone Initiatives. However, it may be difficult to implement due to the Utility’s billing system.

REDOAK CONSULTING
A DIVISION OF MALCOLM PIRNIE

MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #4

Meeting Location: City of Austin Waller Creek Center

Date & Time: January 23, 2008; 1:00 p.m.

Attendees: Greg Meszaros, Perwez Moheet, Daryl Slusher, David Anders, Rusty Cobern, Mike Castillo, Jennifer Ivey, Paul Matthews

The following is a summary of the meeting notes from the Executive Team Briefing which was held on January 23, 2008. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

Water Cost Allocations Issue #1

- The Executive Team decided to use the Base / Extra-Capacity method to determine water cost allocations. A modified version of the Base / Extra-Capacity method, which was recommended by the residential rate advocate, will be built into the model as an alternative for comparison.

Water Cost Allocations Issue #2

- The Executive Team decided to use peak day and peak hour as time steps for extra capacity allocations.

Water Cost Allocations Issue #3

- The Executive Team decided not to develop a separate charge for private fire connections.

Water Cost Allocations Issue #4

- The Executive Team decided to defer their decision regarding the recovery of public fire costs, but has asked Red Oak to develop the ability to run scenarios for the public fire cost alternatives into the model so they can determine the impact on a typical customer's utility bill before making a final decision.

- If the Executive Team decides to implement a fixed fire charge based on meter size, Red Oak will use meter equivalent ratios based on fire flow needs. If the fire flow needs cannot be identified by meter size, capacity-based meter equivalent ratios will be used.

- The Executive Team is concerned that raising the fixed monthly charge will have the greatest impact on low volume users, which would typically include low income customers.

- An advantage of the fixed fire charge is increased revenue stability, which would allow greater flexibility to implement a water conservation block structure.

- The Executive Team would like to consider temporarily allocating a portion of the fire costs to the fixed monthly charge and the rest to the volume charge as a means of gradually implementing a fixed fire charge.

Other Discussion Items

- If a public fire charge is added to the fixed monthly charge, the Executive Team may want to consider reducing or eliminating this charge for low income customers.

- The Water/Wastewater Commission is interested in developing a "lifeline" rate for low income water and wastewater customers. Austin Water Utility needs to find out how Austin Energy reduces the energy bills for their low income customers. This may not be feasible since the Austin Water service area is larger than the Austin Energy service area. Also, the use of master meters, particularly for multifamily residential customers, will complicate this process. Austin Water and Austin Energy may need to work together to provide a credit on the energy bill for those customers who are identified as low income by Austin Energy.

- AWU is currently charging $0.98 per 1,000 gallons for reuse water. This is 50% of the 1996 cost-of-service rate for potable water, plus some inflation. AWU is investing more money in the reuse system and will soon have new reuse customers. The Executive Team is interested in a cost-of-service analysis to determine an appropriate reuse water rate.

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MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #5

Meeting Location: City of Austin Waller Creek Center

Date & Time: February 20, 2008; 1:00 p.m.

Attendees: Greg Meszaros, Perwez Moheet, Daryl Slusher, David Anders, Rusty Cobern, David Juarez, Jennifer Ivey, Paul Matthews

The following is a summary of the meeting notes from the Executive Team Briefing which was held on February 20, 2008. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

Wastewater Cost Allocations Issue #1

- The Executive Team decided to use the Hybrid method, allocating O&M costs based on function and capital costs based on design, to determine wastewater cost allocations.

Wastewater Cost Allocations Issue #2

- The Executive Team decided to use flow, BOD, and TSS only as customer service characteristics for wastewater cost allocation.
- The model will be built with the capability to add TKN and Phosphorous allocations in the future.
- AWU will not implement a sampling protocol to gather data on TKN and Phosphorous in the system until future regulations require it.

Wastewater Cost Allocations Issue #3

- The Executive Team decided to defer their decision regarding the allocation of inflow and infiltration (I/I). The Executive Team will gather historical data on I/I in their system and schedule a future meeting to discuss the data and make a decision on the appropriate allocation of I/I costs.

- I/I costs are currently $11-12 million and are decreasing due to the Austin Clean Water Program.

- Currently wholesale customers with flow meters are not allocated I/I costs based on flow, only those based on connections. If AWU changes the allocation to be based entirely on flow, these customers would not pay any I/I costs under their existing contracts.

Other Discussion Items – Irrigation Rates

- The Water Conservation Task Force has recommended that AWU implement an irrigation rate. The Executive Team is interested in an excess use rate structure as a means of identifying irrigation usage and charging a higher rate for that usage. However, the current billing system is unable to handle an excess use structure. AWU is in the process of procuring a new billing system but it will not be operational for at least three years. The Executive Team does not want to wait until the billing system is updated to implement an irrigation rate.

- The Executive Team identified two alternatives for irrigation rates until an excess use rate structure can be implemented:

    1. Subdivide non-residential customer classes into subclasses by meter size. Develop an increasing block structure with block thresholds based on capacity by meter size.

    2. Subdivide non-residential customer classes into three subclasses –

        - Domestic and outdoor use (customers with one meter for indoor and outdoor usage)

        - Domestic use only (customers with two meters – this is the indoor usage meter)

        - Irrigation use (customers with two meters – this is the outdoor usage meter)

    3. Set Blocks 1 and 2 for irrigation meters at the Block 3 rate so all water usage through Block 3 is charged at the Block 3 rate.

- The Executive Team requested a separate issue paper to discuss irrigation rates. Irrigation rates will not be discussed in detail in the Rate Design issue paper. The Irrigation Rates issue paper will be developed and submitted to the PIC following the Rate Design workshop.

- The Executive Team will discuss irrigation rates again at the next Executive Team briefing before the Irrigation Rates issue paper is finalized and submitted to the PIC.

Other Discussion Items – Low Income Rates

- Austin Energy currently has 4,600 qualified low income customers identified in its system.

- AWU will consider waiving the minimum charge for water and wastewater services for these 4,600 customers.

- The cost of waiving the minimum charge would be absorbed by the rest of the residential class.

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MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #6

Meeting Location: City of Austin Waller Creek Center

Date & Time: March 4, 2008; 8:30 a.m.

Attendees: Greg Meszaros, Perwez Moheet, David Anders, Rusty Cobern, Mike Castillo, Jennifer Ivey, Rick Giardina, Charles Schoening

The following is a summary of the meeting notes from the Executive Team Briefing which was held on March 4, 2008. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

Customer Classification Issue #1

- The Executive Team decided to disaggregate the large-volume (industrial) customer class.

Customer Classification Issue #2

- The Executive Team decided to defer their decision regarding the threshold for inclusion in the large-volume customer class.

- AWU staff will perform additional analysis to determine where the natural break falls between the current large-volume customers and the commercial customer class. Commercial customers with significant usage will be identified to determine if they would qualify for inclusion in the large-volume customer class if the threshold was lowered.

- If the large-volume threshold is lowered and the large-volume customers respond by reducing their demand, more water will be available to other customers, thereby reducing the total system demand and potentially delaying the need for additional water sources.

Customer Classification Issue #3

- The Executive Team decided to defer their decision regarding the creation of an irrigation customer class until the Irrigation Rates issue paper is presented at the next PIC workshop.

- AWU staff will meet with the Austin Energy billing group to discuss the capabilities and limitations of the current billing system.

Other Discussion Items

- The Water Conservation Task Force's recommendation to implement conservation rates for wholesale customers is intended to reduce their gallons per capita per day, which is higher for most wholesale customers than the AWU inside city customers.

- The Water Conservation Task Force's recommendations were discussed along with the need to send a pricing signal that encourages water conservation. This includes implementing a seasonal rate structure for wholesale customers and increasing the rate differential between blocks for single family residential customers.

- AWU's Financial staff are concerned about the increased revenue volatility associated with aggressive conservation rates. The Utility may need to increase its reserves as a hedge against this increased risk.

- The Water Conservation Task Force report recommends adding a fifth block to the single family residential inclining block rate structure to encourage conservation. The Executive Team discussed the best ways to achieve the goals of the Task Force…including whether to implement a fifth block or a modified 4-block rate system. The allocation of costs should also be reviewed to determine if adjustments should be made to further encourage conservation.

- A PIC workshop is scheduled for March 31 to present all Executive Team decisions to date and identify what if scenarios that should be run through the model. A model demo is scheduled for April 21 to show the PIC how the model works. A presentation of the study results to the Water and Wastewater Commission is planned for May. The results will be presented to City Council in late May or early June.

REDOAK CONSULTING
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MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #7

Meeting Location: City of Austin Waller Creek Center

Date & Time: March 18, 2008; 8:30 a.m.

Attendees: Greg Meszaros, Perwez Moheet, Daryl Slusher, David Anders, Rusty Cobern, Mike Castillo, Jennifer Ivey, Paul Matthews, Charles Schoening

The following is a summary of the meeting notes from the Executive Team Briefing which was held on March 18, 2008. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

Rate Structures Issue #1

- The Executive Team decided to waive the fixed charge for qualified low-income residential customers.
- Waiving the fixed charge is targeted at the residential customers who are most in need of the low-income subsidy. It is supported by Randy Chapman, the advocate for the low-income subsidy.
- Waiving the fixed charge would require minimal adjustments within the existing billing system.
- Waiving the fixed charge will cost approximately $450,000 to $500,000 per year.

Rate Structures Issue #2

- The Executive Team decided to recover the low-income subsidy from all retail customer classes.
- AWU staff will verify that the low-income residential customers that are qualified for Austin Energy's low-income program are all inside-city customers.

- AWU will consider extending its low-income subsidy to outside-city residential customers who qualify, even if Austin Energy does not include these customers in its low-income program.

- The cost to administer the low-income subsidy program should be identified and included in the allocation to the retail customer classes.

Rate Structures Issue #3

- The Executive Team decided to defer their decision regarding the addition of a fifth block for single family residential customers.

- A fifth block can be easily added to the current block structure within the existing billing system.

- Any incidental excess revenues as a result of usage in a fifth block could be reallocated to another program such as reclaimed water. However, AWU should consider the implications of over-collecting from any 1 class. AWU Finance staff would like to use any excess revenues to create and maintain a rate stabilization fund to minimize the need for large rate increases in the future.

- If the AWU Executive Team considers a modified 4-block structure for residential customers, it must provide information to the Water Conservation Task Force to show that the modified 4-block structure is consistent with the task force's objectives and can achieve the conservation goals set by the task force.

Rate Structure Issue #4

- The Executive Team decided to defer their decision regarding water conservation incentives for wholesale customers.

- The Water Conservation Task Force recommended a conservation rate structure for wholesale customers.

- A seasonal rate would be easier to implement than an excess-use rate structure.

- There should not be legal issues associated with revising the wholesale rates as long as the new rate structure recovers cost of service from each wholesale customer.

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MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #8

Meeting Location: City of Austin Waller Creek Center

Date & Time: April 1, 2008; 9:00 a.m.

Attendees: Greg Meszaros, Perwez Moheet, Daryl Slusher, David Anders, Rusty Cobern, Mike Castillo, Jennifer Ivey, Paul Matthews, Charles Schoening

The following is a summary of the meeting notes from the Executive Team Briefing which was held on April 1, 2008. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

Excess Use Rate Structure Issue #1

- The Executive Team decided to pursue the implementation of an excess use rate structure to achieve the goals of the Water Conservation Task Force.
- It is unknown how long the development and implementation of an excess use rate structure will take. Rusty Cobern has been tasked to work with Austin Energy to develop a project timeline and budget.
- AWU will request a Quick Response Estimate (QRE) from Austin Energy to reprogram the existing billing system for the excess use rate structure.
- AWU will request the ability to have up to three blocks within the excess use rate structure.
- Nonresidential customers with an irrigation meter would be charged at the highest residential block rate for all water usage from the irrigation meter and at the excess use rates for all domestic water usage.
- The Executive Team will update the PIC on this decision once the QRE is received from Austin Energy.

Rates for Irrigation Customers Issue #1

- The Executive Team decided to set aside excess revenues received from the irrigation customers for other designated purposes.

- The Executive Team will determine annually how the excess revenues should be used. Potential uses for the excess revenues are the reclaimed water system, water conservation program, and a rate stabilization fund.

Rates for Irrigation Customers Issue #2

- The Executive Team decided to set the irrigation rate equal to the highest residential block rate. This rate will be phased in over 2-3 years.

- The Executive Team is concerned that setting the irrigation rate at the highest residential block rate without phasing it in will create rate shock for the non-residential customers.

- If it is not possible to implement an excess use rate structure with the existing billing system, AWU will not implement irrigation rates because, without an excess use rate structure, they would create significant inequities among non-residential customers.

Rates for Irrigation Customers Issue #3

- The Executive Team decided to price all water usage in blocks 1 through 3 from a residential irrigation meter at the block 3 rate. This will prevent residential customers with a separate irrigation meter from receiving twice as much water at a discounted rate as a residential customer with a single meter.

Other Issues

- The residential advocate is likely to request a careful review of the costs included in the minimum monthly charge. Red Oak will review these costs and the recommended minimum charge with the Executive Team prior to releasing this information to the PIC.

- The next Water Conservation Implementation Task Force meeting is scheduled for April 28, 2008. AWU will provide an update on the cost-of-service study at this meeting.

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MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
Executive Team Briefing PIC Meeting #9

Meeting Location: City of Austin Waller Creek Center

Date & Time: April 22, 2008; 2:00 p.m.

Attendees: Greg Meszaros, Perwez Moheet, Daryl Slusher, David Anders, Rusty Cobern, Mike Castillo, Jennifer Ivey, Paul Matthews, Charles Schoening

The following is a summary of the meeting notes from the Executive Team Briefing which was held on April 22, 2008. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

- The Executive Team is concerned that there may not be enough time to adequately present the cost-of-service rates to the Water and Wastewater Commission and the City Council for implementation on November 1, 2008. They would prefer to implement the revenue increase adjustments in November and postpone the cost-of-service adjustments until April 1, 2009. An April implementation would provide conservation rates, potentially including excess-use rates for nonresidential customers, prior to the 2009 peak season.

- The fee schedule, including the proposed water and sewer rates, is due to the Budget office in early July 2008 for inclusion in the 2009 budget.

- Another PIC workshop will be required to present the final results of the water and sewer "what if" scenarios. This workshop is tentatively scheduled for Tuesday, May 13. Red Oak will meet with Utility staff on Monday, April 28, and Tuesday, April 29, if necessary, to finalize the "what if" scenario runs. The results will be presented to the Executive Team prior to the final PIC workshop. This extended schedule will allow more time for the PIC to provide comments on the results of the "what if" scenarios.

- The Executive Team would like to transition to true cost-of-service rates and eliminate the 10% subsidy of the residential customers by the commercial and industrial customers. The allocation of inflow and infiltration as system costs will at least partially offset the elimination of the subsidy.

- An implementation timeline will be developed at the April 28 meeting with staff. Red Oak will complete its final report by early September, and the Executive Team will present the cost-of-service results and rates to the City Council for approval in January following one-on-one briefings in October and November.

- Red Oak will evaluate the feasibility of removing the distinction between inside city customers and outside city customers.

- The Executive Team is concerned about significant increases to the wholesale customers as a result of methodology changes. Red Oak will review the model to determine what methodology changes are causing the increase.

- The billing data for the large industrial customers may need to be reviewed to identify anomalies such as a decrease in consumption due to the closing of a facility. These anomalies will misrepresent their usage patterns and affect their peaking factors.

APPENDIX

B

PIC Meeting Minutes

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MEETING MINUTES

CITY OF AUSTIN
2007 COST OF SERVICE AND RATE STUDY
PIC Orientation Workshop

Meeting Location: City of Austin Waller Creek Center

Date & Time: November 27, 2007; 6:00 p.m.

Attendees:
Angie Rubottom*, Residential Rate Advocate
Lanetta Cooper**, Residential Representative
Tom Graves*, Multifamily Representative
Dan Wilcox**, Industrial Representative
Joy Smith*, Wholesale Representative
Nelisa Heddin, Wholesale Rate Consultant
Myra Salas**, Wholesale Representative
Mario Espinoza, W/WW Commission
Greg Meszaros, City of Austin
David Anders, City of Austin
Daryl Slusher, City of Austin
Rusty Cobern, City of Austin
Mike Castillo, City of Austin
Darrel Culberson, City of Austin
Jimmy Jackson, City of Austin
Denise McDonald, City of Austin
Robena Jackson, Group Solutions RJW
Charles Schoening, Red Oak
Paul Matthews, Red Oak
Rick Giardina, Red Oak
Jennifer Ivey, Red Oak

The following is a summary of the meeting notes from the PIC Orientation Workshop which was held on November 21, 2007. The notes below constitute Red Oak's understanding of the items discussed, key decisions made, and action items assigned at the meeting.

- Ground rules presented by Red Oak were accepted by the attendees.
- PIC members' would like representation by small business on committee. The City is working on identifying a second commercial representative and will attempt to represent small businesses.

* Rate Consultant
** Participated in previous cost-of-service study

- The PIC Workshop scheduled for Monday, January 21, 2008 (Martin Luther King Day) should be moved to Tuesday, January 22, 2008.
- The PIC Workshop scheduled for Monday, February 18, 2008 (President's Day) should be moved to Tuesday, February 19, 2008. The PIC members would like to continue meeting at 6:00 p.m.
- The Wholesale Rate Consultant requested copies of all study data; the Residential Representative requested copies of the previous studies. They will provide these requests to Mike Castillo.
- The Residential Representative is concerned that the water and waste water allocation topics may require two workshops. The project schedule is flexible to allow additional workshops if necessary.
- Some PIC members would like to be provided the rate model in Excel in order to run what if scenarios. The City will not provide the model but will run what if scenarios requested by the PIC members and provide the results.
- Food will be provided at each PIC Workshop.
- Issue papers will provide a general overview of the accepted theories and methodologies and will use specific AWU data where appropriate.
- Some topics addressed in the previous studies may not be readdressed in this study. These topics include reserve capacity, peaking factors and sewage strength. Only topics addressing elements of the cost-of-service study that may be changed by the Executive Team will be addressed.
- Red Oak will provide information regarding cost-of-service methodologies used by comparable utilities as appropriate.
- The cost-of-service study will only address water and sewer rates. It will not address other charges and fees.
- Industrial customers have continuous metering so they can provide their specific flow and strength data. The City will consider using this data in the cost-of-service study.

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

Meeting: **Public Involvement Committee**
Workshop 2: Revenue Requirements

Date: 12-17-07 **Time:** 6pm **Location:** Waller Creek Center

PIC Members in Attendance :

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Kristan Arrona	Multifamily
Tom Graves	Multifamily
Dan Wilcox	Industrial
Myra Salas	Wholesale
Joy Smith	Wholesale
Gene McMenamin	Commercial

I. Agenda Items:

The following items were covered at the PIC meeting of December 17th:

1. Introductions
2. Ground rules for PIC meeting
3. Decisions by Executive Team
4. PIC comments from last meeting
5. Presentation on revenue requirements
6. PIC member comments and discussion
7. Summary of decisions, agreements, and next meeting
8. Public comments period

II. Key Interests and Issues:

PIC members comments and questions focused on:

- Access to the cost-of-service model once it is developed.
- Allocation of capital requirements under the cash basis (including the handling of debt service.)
- The impact of discussed revenue requirements options on customer classes.

III. Decisions, Agreements and Action Needed:

Action Items:
(a) Resend PIC comments from the November 27 meeting to members
(b) Begin posting information to the study web page

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

Agreements:
Written comments from the Residential Rate Advocate on the December issue paper will be submitted seven days after the December 17th workshop, rather than the normally agreed on five days.

IV. Public Comment:

One citizen spoke during the public comment period, addressing questions to the rate consultant. (Note: Citizens were encouraged to submit in writing any comments they would like included in the record.)

Meeting Sign-In Sheet: Attached

Prepared by: Jennifer LeBaron, Group Solutions RJW

AUSTIN WATER UTILITY (AWU) 2007 COS STUDY MEETING SUMMARY

Meeting: **Public Involvement Committee**
Workshop 3: Water Cost Allocations and Fire Charges

Date: 1-7-08 **Time:** 6pm **Location:** Waller Creek Center

PIC Members in Attendance :

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Kristan Arrona	Multifamily
Tom Graves	Multifamily
Dan Wilcox	Industrial
Doris Williams	Commercial
Joy Smith	Wholesale
Dale Gray	All

I. Agenda Items:

The following items were covered at the PIC meeting of January 7:

1. Welcome
2. Review Internet Site (http://www.ci.austin.tx.us/water/costofservice.htm)
3. Overview of water system
4. Decisions by Executive Team
5. PIC comments from last meeting
6. Presentation on water cost allocations
7. PIC member comments and discussion
8. Summary of decisions and agreements
9. Public comment period

II. Decisions by Executive Team:

The AWU Executive Team met after the December PIC meeting and made the following decisions to:

(a) Provide the COS model inputs and outputs in Adobe Acrobat format.
(b) Provide “live” demonstration of model during upcoming PIC meeting.
(c) Rely on City data only (not customer-provided data because of City’s inability to control quality of outside data and maintain consistency among all customer classes).
(d) Add evaluation criterion of policy durability (defined as a policy’s ability to continue to be appropriate and result in a fair and equitable rate for all customer classes regardless of changes to the cost-of-service assumptions).

AUSTIN WATER UTILITY (AWU) 2007 COS STUDY MEETING SUMMARY

III. Key Interests and Issues:

PIC members comments and questions focused on:

- Water Cost Allocation—Commodity Demand versus Base/Extra-Capacity. Discussion focused on whether AWU's current methodology, the Base/Extra-Capacity, is precise enough.
- Private Fire Connection Costs—AWU's current methodology is to not charge for private fire connections. Discussion focused on whether to charge private fire connections for direct as well as indirect costs. Consultants recommend charging only for direct costs.
- Public Fire Costs—AWU's current methodology is to recover indirectly. Discussion focused on whether to have a fixed charge based on property value, a fixed charge based on fire customer class, or a fixed charge based on water meter size as recommended by Consultants.
- Economies of Scale (e.g. How customers can benefit from economies of scale).

Action Items:

(a) PIC members will review the handouts on budget/financial policies and should they have any questions, bring them for discussion to 1-22-08 meeting.

Agreements and Next Steps:

(a) Written comments on meeting from PIC due 1-14-08.
(b) Wastewater Cost Allocation issue paper due to PIC 1-15-08.
(c) Next PIC Workshop scheduled for 1-22-08 (Tuesday)

IV. Public Comment:

One citizen spoke in favor of low-income utility customers being given financial considerations when setting the rate structure. The citizen was encouraged to submit written comments for the record. A second citizen spoke against building Water Treatment Plant #4 and urged the AWU to encourage conservation by charging higher peaking rates for all rate classes. The citizen submitted a statement for the record.

Meeting Sign-In Sheet: Attached

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

Meeting: **Public Involvement Committee**
Workshop 4: Wastewater Cost Allocations

Date: 1-22-08 **Time:** 6 pm **Location:** Waller Creek Center

PIC Attendees:

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Kristan Arrona	Multifamily
Tom Graves	Multifamily
Doris Williams	Commercial
Jeff Covington	Industrial
Nelisa D. Heddin (sitting in for Joy Smith)	Wholesale
Myra Salas	Wholesale (Marsha WSC)
Mario Espinoza	All (Water & Wastewater Commission)

I. Agenda Items:

The following items were covered at the PIC meeting.

1. Welcome
2. Overview of budget and financial policies
3. Overview of wastewater system
4. Decisions by Executive Team
5. PIC comments from last meeting
6. Presentation on wastewater cost allocations
7. PIC member comments and discussion
8. Review Project Schedule
9. Summary of decision and agreements
10. Public comment period

II. Decisions by Executive Team

The AWU Executive Team met after the January 7 PIC meeting and made the following decisions:

a) Revenue Requirements Issue 1—cash basis will be used
b) Revenue Requirements Issue 2—future budgets will be used
c) Revenue Requirements Issue 3-5—not applicable because cash basis will be used

III. Key Interests and Issues:

PIC Comments and questions focused on:

1. Which of the Wastewater Cost Allocation Options is most appropriate—Design Basis, Functional Basis, or a Hybrid Approach? The AWU's current methodology is Design Basis, but the consultants are recommending a Hybrid Approach.

2. What are the appropriate customer service characteristics—Flow, BOD, and TSS only (which is AWU's current methodology), adding Total Kjeldahl Nitrogen (TKN) and/or adding Phosphorous? The consultants are recommending adding TKN and phosphorous once sufficient data is available from an industrial pretreatment sampling program.

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

3. How should I/I be estimated and added? Should it be based on combined connections and volume, contributed wastewater volume, number of connections, or land area? AWU's current methodology is to allocate 50% based on number of connections and 50% based on contributed volume. The consultants are recommending allocating I/I based on contributed wastewater volume.

Requests from PIC:
Mario Espinoza requested a cost estimate for adding TKN and phosphorous.

Agreements and Next Steps:
Rusty Cobern proposed a change (and the PIC agreed) to the schedule in order to allow everyone more time to process information:

(a) PIC meeting originally scheduled for 2-4-08 was postponed to 2-19-08.
(b) Deadline for written comments from PIC on 1-22-08 meeting extended to 2-5-08.
(c) Customer Characteristics issue paper due to PIC 2-12-08.
(d) Rate Design meetings to be held 3-3-08 and 3-17-08.
(e) An additional meeting may be scheduled for 3-31-08, if it is needed.

IV. Public Comments:
There were no public comments

Meeting Sign-In Sheet: Attached

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

Meeting: **Public Involvement Committee (PIC)**
Workshop 5: Customer Classifications

Date: 2-19-08 **Time:** 6 PM **Location:** Waller Creek Center

PIC Attendees:

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Tom Graves	Multifamily
Doris Williams	Commercial
Nguyen Stanton	Commercial
Dan Wilcox	Industrial
Jeff Covington	Industrial
Joy Smith	Wholesale
Myra Salas	Wholesale

I. Agenda Items:

The following items were covered at the PIC meeting:

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Presentation on customer classifications
5. PIC member comments and discussion
6. Summary of decisions and agreements
7. Public comment period

II. Decisions by Executive Team

The AWU Executive Team met after the January 22 PIC meeting and made the following decisions:

a) *Water Cost Allocation Issue 1* – Base/extra-capacity method will be used
b) *Water Cost Allocation Issue 2* – Peak day and peak hour will be used to allocate extra capacity costs
c) *Water Cost Allocation Issue 3* – a separate charge will not be developed for private fire connections
d) *Water Cost Allocation Issue 4* – deferred (public fire charges)

III. Key Interests and Issues:

PIC comments and questions focused on:

1. Should the large-volume customer class be disaggregated? The AWU's current methodology maintains a single large-volume customer class (made up of seven industrial customers). The consultants are recommending that the utility disaggregate the large-volume class, citing improved intraclass equity and a potential increase in water conservation as important factors.
2. Should the threshold for inclusion in the large-volume class be adjusted? The consultants are recommending that AWU maintains the current threshold of 85 MG per year.

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

3. Should an irrigation customer class be created? AWU does not currently have an irrigation class and the consultants are recommending that no irrigation class be implemented at this time.
4. PARKING LOT ITEM – The following question was tabled for later consideration by AWU: How to charge customers who have other sources of water but who use AWU water during peak times and/or as an additional source of water?

IV. Agreements and Action Needed:

In response to requests from PIC members, AWU and consultants will provide calculations of three-year peaking history, the potential differences in costs among industrial users if the large-volume class is disaggregated, and the water conservation report developed by the AWU task force. They will also report back to the PIC on the question of whether it is feasible to disaggregate the commercial customer class and if so, the logical subcategories within the commercial class.

Written comments on this meeting are due to Mike Castillo on February 26.

The Rate Design issue paper will be forwarded to the PIC on February 25.

The next PIC workshop is scheduled for Monday, March 3.

V. Public Comment:

Randy Chapman, Texas Legal Services Center, offered public comment. He thanked AWU staff for assisting him in collecting information and spoke of the importance of developing a cost of service rate structure that responds to the needs of the most economically vulnerable.

VI. Meeting Sign-In Sheet: Attached

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

Meeting: **Public Involvement Committee (PIC)**
Workshop 6: Rate Design

Date: 3-3-08 **Time:** 6 PM **Location:** Waller Creek Center

PIC Attendees:

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Kristan Arrona	Multifamily
Tom Graves	Multifamily
Nguyen Stanton	Commercial
Doris Williams	Commercial
Dan Wilcox	Industrial
Jeff Covington	Industrial
Joy Smith	Wholesale
Myra Salas	Wholesale
Mario Espinoza	All

I. Agenda Items:

The following items were covered at the PIC meeting:

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Presentation on rate design
5. PIC member comments and discussion
6. Summary of decisions, agreements, and next steps
7. Public comment period

II. Decisions by Executive Team

The AWU Executive Team met after the February 19 PIC meeting and made the following decision:

a) *Wastewater Cost Allocations Issue 1* – Hybrid Method will be used (O&M allocated by function and capital allocated by design)
b) *Wastewater Cost Allocations Issue 2* – Flow, BOD, and TSS will be used to allocate wastewater costs
c) *Wastewater Cost Allocations Issue 3* – deferred (I/I cost allocations)

III. Key Interests and Issues:

PIC comments and questions focused on:

1. Low-Income Residential Subsidy. Should AWU continue its current methodology of discounted rates for Blocks 1 and 2 or waive the fixed charge for qualified low-income residential customers? The consultants are recommending that the fixed charge be waived for the low-income. It was suggested that AWU utilize Austin Energy's low-income criteria.
2. Recovery of Low-Income Subsidy. Should AWU continue its current methodology of recovering the subsidy within the single-family residential class or recover the subsidy from all inside-city retail customer classes? The consultants are recommending the subsidy be recovered from all

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

inside-city retail customer classes.

3. Fifth Block for Residential. Should AWU continue its current 4-block structure, go to a 5-block structure, or go to a revised 4-block structure? The consultants are recommending a revised 4-block structure. The revised 4-block structure can provide a similar incentive for conservation as the 5-block structure and offer the added benefit of being easier to understand.
4. Conservation Incentives for Wholesale Customers. Should there be uniform rates by wholesale class, which is AWU's current methodology, seasonal rates, or excess-use rates? The consultants are recommending AWU continue its methodology of uniform rates.

IV. Agreements and Action Needed:

In response to requests from PIC members, AWU and consultants will:
a) Provide a frequency analysis of consumption within blocks.
b) With each issue paper, provide a short summary of issues and recommendations found in the paper.
c) Include the topic of the next PIC meeting in the meeting summary.
d) Provide the break-even point in usage curve for the residential customer class.
e) Identify AWU's top users in the commercial class.

Written comments on this meeting are due to Mike Castillo on March 10.

The Irrigation Rates issue paper will be forwarded to the PIC on March 10.

The next PIC workshop is scheduled for Monday, March 17.

A meeting was also scheduled for Monday, March 31. There will be no new issue paper for this meeting. The meeting will be used to discuss executive team decisions from prior issues. The group will also discuss requests for "what if" scenarios the PIC would like run in the COS model(s).

A meeting was scheduled for Monday, April 21. There will be no new issue paper. This meeting will be used to demonstrate the COS model, review COS results, and review "what-if" scenarios.

V. Public Comment:

Regarding Issue 1: Low-Income Residential Subsidy-- Randy Chapman, Texas Legal Services Center, spoke in favor of the consultant's recommendation that AWU waive the fixed charge for qualified low-income residential customers.

VI. Meeting Sign-In Sheet: Attached

VII. Topic for Next Meeting: Irrigation Rates

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

Meeting: **Public Involvement Committee (PIC)**
Workshop 7: Irrigation Rates

Date: 3-17-08 **Time:** 6 PM **Location:** Waller Creek Center

PIC Attendees:

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Tom Graves	Multifamily
Nguyen Stanton	Commercial
Dan Wilcox	Industrial
Jeff Covington	Industrial
Joy Smith	Wholesale

I. Agenda Items:

The following items were covered at the PIC meeting:

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Presentation on irrigation rates
5. PIC member comments and discussion
6. Summary of decisions, agreements, and next steps
7. Public comment period

II. Decisions by Executive Team

The AWU Executive Team met after the March 3 PIC meeting and made the following decision:

a) *Customer Classifications Issue 1* – Disaggregate large-volume customer class
b) *Customer Classifications Issue 2* – Deferred (large-volume class threshold)
c) *Customer Classifications Issue 3* – Deferred (irrigation customer class)

III. Key Interests and Issues:

PIC comments and questions focused on:

1. Issue 1: Excess Revenues from Irrigation Rates. Should AWU reduce the indoor water rate for irrigation customers, reduce rates for all customers, set irrigation rate at cost of service (resulting in no excess revenues), set revenue aside for other designated purposes, or not establish an irrigation rate which is AWU's current methodology? Consultants are recommending that no irrigation rate be set until excess-use rates can be implemented.

2. Issue 2: Appropriate Level for Irrigation Rates. Should the irrigation rate be equal to the highest residential block rate, equal to the cost of service, or is no irrigation rate appropriate? The Water Conservation Task Force recommended the irrigation rate be set at the highest residential block rate. Again, consultants are recommending no irrigation rate be set.

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

However, if there is an irrigation rate set, consultants recommend it be set at the cost-of-service rate.

3. Issue 3: Residential Irrigation Usage at Blocks 1 and 2. Should AWU continue its current methodology of providing Blocks 1 and 2 discounted water, or price all residential irrigation water at Block 3 and above? Consultants recommend irrigation usage be priced at Block 3 and above.

IV. Agreements and Action Needed:
In response to a request from PIC members, AWU and consultants will:

a) Provide 07 and 08 revenue requirements.

In response to a request from consultants, PIC members are to:

a) Email ideas for “What if?” scenarios to be run in the COS model(s).

Written comments on this meeting are due to Mike Castillo on March 24.

The next PIC workshops are scheduled for March 31 and April 21.

There will be no new issue papers for these meetings. The meetings will be used to discuss "What if?”scenarios.

V. Public Comment:
Randy Chapman, Texas Legal Services Center, thanked consultants for their recommendation on March 3 that AWU waive the fixed charge for qualified low-income residential customers.

VI. Meeting Sign-In Sheet: Attached

VII. Topic for Next Meeting: “What if?” scenarios

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

Meeting: **<u>Public Involvement Committee (PIC)</u>**
<u>Workshop 8: Model Preview</u>

Date: 3-31-08 **Time:** 6 PM **Location:** Waller Creek Center

PIC Attendees:

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Kristan Arrona	Multifamily
Tom Graves	Multifamily
Jeff Covington	Industrial
Joy Smith	Wholesale
Myra Salas	Wholesale

I. Agenda Items:

The following items were covered at the PIC meeting:

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Preview of cost-of-service model
5. Discuss desired "what if" scenarios
6. Public comments

II. Decisions by Executive Team

The AWU Executive Team met after the March 17 PIC meeting and made the following decisions:

a) *Rate Structures Issue 1* – Waive fixed charge for low-income customers
b) *Rate Structures Issue 2* – Recover low-income subsidy from all retail customer classes
c) *Rate Structures Issue 3* – Deferred (5^{th} block for residential customer class)
d) *Rate Structures Issue 4* – Deferred (wholesale class conservation rates)

III. Key Interests and Issues:

PIC comments and questions focused on:

1. The consultants' preview of the cost-of-service model

2. Discussion of "What If?" Scenarios:

Identified by Executive Team:

Fire protection (recover indirectly vs. fixed charge based on meter size)
Residential rate structure (5-block vs. modified 4-block)
Wholesale conservation rates
Rate design (above/below COS)

Identified by Residential Advocate:

Modified base/extra capacity method

Identified by Industrial Advocate:

I/I allocations

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

IV. Agreements and Action Needed:
In response to a request from PIC members, AWU and consultants will:
a) Provide an outline of the cost-of-service steps
b) Provide a formula for indirect costs

Written comments on this meeting are due to Mike Castillo on April 7.

The next PIC workshop is scheduled for April 21.

There will be no new issue paper for this meeting. The meeting will be used to discuss the results of the "What if?" scenarios.

V. Public Comment:
There were no comments from the public.

VI. Meeting Sign-In Sheet: Attached

VII. Topic for Next Meeting: Results of "What if?" scenarios

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

Meeting: **Public Involvement Committee (PIC)**
Workshop 9: Cost-of-Service Model Results

Date: 4-21-08 **Time:** 6 PM **Location:** Waller Creek Center

PIC Attendees:

Name	Customer Class Representation
Angela Rubottom	Residential
Kristan Arrona	Multifamily
Jeff Covington	Industrial
Dan Wilcox	Industrial
Nguyen Stanton	Commercial
Joy Smith	Wholesale

I. Agenda Items:

1. The meeting time was spent reviewing the new cost-of-service model and the resulting water rates for the selected "what if" scenarios. This was scheduled to be the last meeting. However, because staff and the consultants did not have adequate time in which to prepare the model for review by the PIC, another meeting will be necessary.

II. Decisions by Executive Team

a) There were no new decisions from the Executive Team following the March 31 meeting.

III. Key Interests and Issues:

PIC comments and questions focused on the proposed Red Oak cost-of-service model. The PIC compared the existing Black and Veatch model to the proposed Red Oak model and reviewed the resulting rates from selected runs of the Red Oak model.

IV. Agreements and Action Needed:

a) AWU and the consultants asked those PIC members who had comments on the 4/21 meeting to forward them as soon as possible. Also, those PIC members planning to submit a final report were asked to begin work.

b) AWU and consultants agreed to send out final recommendations to PIC members. (Note: Some items are awaiting final decisions by the AWU Executive Team.)

c) A tentative date of May 6 was set for the next PIC meeting. Members will be sent a confirmation notice.

d) PIC members were told that the Water/Wastewater Commission meets on May 16 and that there could be a presentation on the COS study. Members are welcome to attend and offer any comments they'd like.

V. Public Comment:

There were no comments from the public.

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

VI. Meeting Sign-In Sheet: Attached

VII. Topic for Next Meeting:

Review of proposed model and results of “What if” scenarios.

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 COS STUDY
MEETING SUMMARY

Meeting: **Public Involvement Committee (PIC)**
Workshop 10: Review of Options

Date: 7-22-08 **Time:** 6 PM **Location:** Waller Creek Center

PIC Attendees:

Name	Customer Class Representation
Angela Rubottom	Residential
Lanetta Cooper	Residential
Tom Graves	Multifamily
Jeff Covington	Industrial
Dan Wilcox	Industrial
Nguyen Stanton	Commercial
Joy Smith	Wholesale
Mario Espinoza	All

I. Agenda Items:

a) The meeting time was spent reviewing water and wastewater options developed during previous PIC workshops, comparing the current Black and Veatch model with the Red Oak base model and additional options.

II. Decisions by Executive Team

The following are decisions made by the Executive Team since the 4-21-08 meeting:

a) 5-block rate structure for residential
b) Outside-city retail classes eliminated
c) No separate irrigation class
d) April 2009 target date for implementation

III. Activities Since Last Meeting

Water Model

a) Variable month implementation
b) Excess-use rate design

Wastewater Model

a) Re-constructed from water model to be consistent
b) Updated cost allocations
c) Developed extra-strength surcharge calculations

Other Activities

a) Validated inputs
b) Conducted staff training
c) Developed “what-if” options

IV. Key Interests and Issues:

PIC comments and questions focused on water options comparing the current Black and Veatch model with Option 1 (the Red Oak Base), Option 2 (seasonal rates for wholesale customers), Option 3 (recover fire protection costs through fixed charges), Option 4 (all classes at cost of service), and Option 5 (Residential Advocate Hybrid allocation approach). Comments and questions also focused on wastewater options comparing the current Black and Veatch model with Option 1

AUSTIN WATER UTILITY 2007 COS STUDY MEETING SUMMARY

(Red Oak Base—including I&I as a system cost), Option 2 (I&I allocated based on 50% customer and 50% flow), and Option 3 (all classes at cost of service).

V. Agreements and Action Needed:
AWU staff agreed to email the proposed water utility rates to PIC members on July 23. Also, AWU staff will email proposed times for PIC members to participate in a "net meeting" to go through a model demonstration.
Next Steps:

a) PIC members review options and provide comments—due August 12
b) Executive Team review of PIC member comments and decisions on remaining issues—2 weeks (depending on comments)
c) Update model based on FY 08-09 Approved Budget—2 weeks
d) PIC Meeting (to review "final" Executive Team decisions and "final" model)—late September or early October
e) Submission of final comments by PIC members—3-4 weeks
f) COS Presentation to Citizen's Water Conservation Implementation Task Force—November or December meeting
g) COS Presentation and Adoption by the City Council—January or early February
h) Implementation of rates based on new COS methodology— target date of April 1, 2009.

VI. Public Comment:
There were no comments from the public.

VII. Meeting Sign-In Sheet: Attached

VIII. Topic for Next Meeting:
Review of "final" Executive Team decisions and "final" model

Prepared by: Rhonda Price, Group Solutions RJW

AUSTIN WATER UTILITY 2007 - 2008 COS STUDY MEETING SUMMARY

Meeting: **Public Involvement Committee (PIC)**
Workshop 11: Selected Methodologies

Date: 10-09-08 **Time:** 6 PM **Location:** Waller Creek Center

PIC Attendees:

Name	**Customer Class Representation**
Lanetta Cooper	Residential
Tom Graves	Multifamily
Kristan Arrona	Multifamily
Jeff Covington	Industrial
Dan Wilcox	Industrial
Nguyen Stanton	Commercial
Joy Smith	Wholesale
Myrna Salas	Wholesale

I. Agenda Items

The following items were covered at the PIC meeting:

1. Welcome
2. Low-income waiver program update
3. Executive Team decisions
4. Review model results
5. Next steps
6. Public comments
7. Closing remarks

II. Decisions by Executive Team

The following decisions were made by the Executive Team since the 7-22-08 meeting:

Water

- Water cost allocation approach - the “Base/Extra Capacity” option was chosen because it is consistent with industry standards and promotes conservation during peak periods.
- Recovery of fire protection costs - the “fixed charges based on meter size” option was chosen because it is a more equitable allocation of public fire costs and increases revenue stability.
- Allocation of general fund transfers - the “revenue-based” option was chosen because it is consistent with how the transfer amounts are determined.
- Allocation of treatment plant maintenance cost - the “base costs only” option was chosen because it aligns maintenance costs with usage.

Wastewater

- Allocation of costs for I/I - the “contributed volume” option was chosen because it recognizes that I/I is a system cost. Individual customers cannot control I/I and I/I consumes flow-related capacity.
- Large volume wastewater strengths - the “3-year average” option was chosen because it reduces volatility in charges while maintaining equity.

Rate Design

- Definition of large-volume customer - the “85 MG/year” option was chosen because it is consistent with a natural break in the consumption patterns

for AWU's customers.
- Conservation rates for wholesale customers - the "uniform rates" option was chosen because wholesale customers have individual rates that already provide conservation incentives while other options increase revenue volatility.
- Residential subsidies - the "cost-of-service" option was chosen because it achieves cost of service while reducing rate shock. The executive team anticipates this transition to occur over a span of 5 years.

III. Key Interests and Issues
PIC comments and questions were related to the decisions presented by the Executive Team.

IV. Agreements and Action Needed
The Executive Team asked the PIC members to visit with their stakeholders to discuss all final decisions and requested final comments on the study as well as the results of the study. The Executive Team also agreed to make the final reports available to the PIC members as well as the public via the website.

Next Steps:

a) PIC members review decisions and provide comments to Michael Castillo by October 31
b) Update rates for FY 08-09
c) Final Reports from Red Oak and the Residential Rate Advocate
d) Move forward with Excess-Use Rate Design
e) Present Study results to:
    - City Manager
    - Boards and Commissions
f) Public hearing on proposed rate changes - January 2009
g) City Council briefing and action - January 2009

V. Public Comment:
There were no comments from the public.

VI. Meeting Sign-In Sheet: Attached

Prepared by: Nicole Arntz, Group Solutions RJW

APPENDIX

C

PIC Meeting Presentations

Cost-of-Service Rate Study 2007

Public Involvement Committee Workshop 1: Orientation

Austin Water Utility

November 27, 2007

Tonight's Agenda

1. Introductions
2. Role of Public Involvement Committee (PIC) in Cost-of-Service Study
3. Review and discuss study objectives
4. Overview of cost-of-service approach
5. Executive Team's evaluation criteria
6. Schedule of proposed workshops
7. PIC member comments and discussion

Introductions

Public Involvement Committee Orientation Workshop
November 27, 2007

Pathways to Lasting Solutions

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Executive Team

- Greg Meszaros
- Perwez Moheet
- David Anders
- Daryl Slusher

- Roles
  - Evaluate Red Oak analyses
  - Consider PIC comments
  - Prepare recommendations for Council consideration

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City Project Team

- Rusty Cobern
- Mike Castillo
- Darrel Culberson
- Denise McDonald
- Jimmy Jackson

- Roles
  - Provide technical support and data resources
  - Review all technical analyses

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Our Red Oak Project Team

- Robena Jackson, Group Solutions RJW
- Red Oak, a division of Malcolm Pirnie
  - Rick Giardina
  - Paul Matthews
  - Jennifer Ivey
  - Charles Schoening

- Serve as public involvement consultant/facilitator
- Provide technical analyses
- Prepare cost-of-service analysis

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Role of Public Involvement Committee

- Customer class and community representatives
- Roles:
  - Advise project team and utility
  - Represent the interest of their customer class
  - Seek areas of agreement on methodologies

Ground Rules

1. PIC members are responsible for attending meetings or providing a knowledgeable alternate
2. Meetings will be facilitated
3. Meetings are open to the public and include a period for public comment
4. Meetings will begin with a presentation by consultant on the decisions of the Executive Team and on the issue paper topic(s) of the workshop
5. PIC members will be able to ask questions and provide comments and concerns
6. Each meeting will end with a brief summary of decisions made, consensus achieved, and a preview of next meeting, etc.

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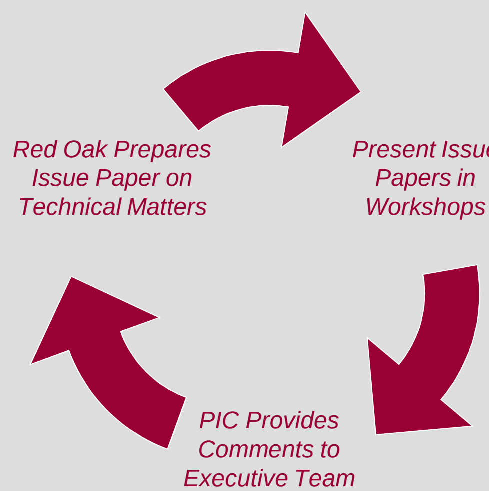
Ground Rules (Cont.)

7. A period for public comment will be provided at each meeting to allow input from non-committee members
8. PIC members, and others in attendance, are responsible for limiting comments to matters within the scope of the study; comments will be limited to 5 minutes
9. PIC members should provide formal written comments to the City for Executive Team review no later than 5 business days after the workshop
10. Comments and materials will be regularly posted to the City of Austin website
11. PIC committee members are responsible and strongly encouraged to share information with their constituents

Planned Information Process



Key Project Dates

- Final study report: May 31, 2008
- Presentations of final results: June 2008
- FY2008-2009 Operating Budget: August 1, 2008
- Rates effective November 1, 2008

PIC Workshop Topics and Dates

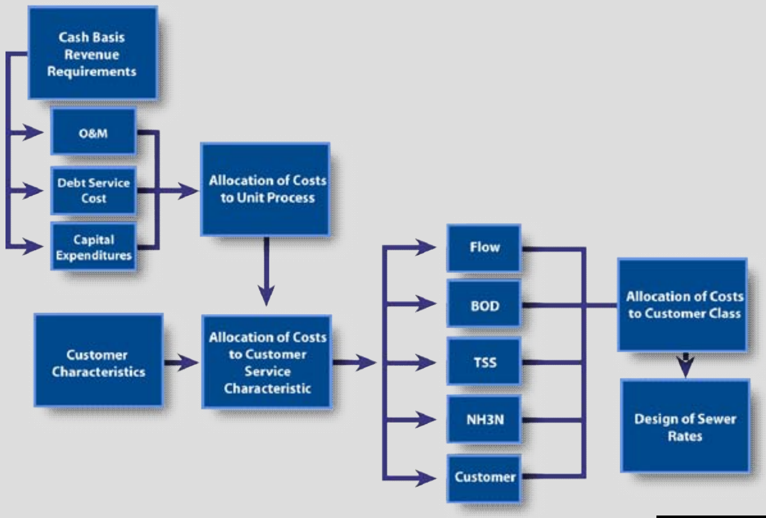
- PIC Orientation (11/27)
- Revenue Requirements (12/17)
- Water/Wastewater Allocation Methodologies (1/7)
- I/I Allocations and Fire Charges (1/21)
- Composition of Industrial Class (2/4)
- Rate Design (2/18 and 3/3)

Process for Developing Technical Recommendations

Project Goals and Objectives

- Prepare industry-standard cost-of-service analysis
  - Continue AWU's practice of transparency in cost-of-service analysis
  - Address interclass, intraclass, intergenerational equity concerns
  - Conduct transparent review of critical methodologies and options
  - Leverage industry standards to enhance decision making
  - Investigate rate design options to enhance equity and conservation
- Conduct Public Involvement Program to ensure community input and dissemination of results
- Meet requirements of project schedule

Traditional Wastewater Cost-of-Service Analyses



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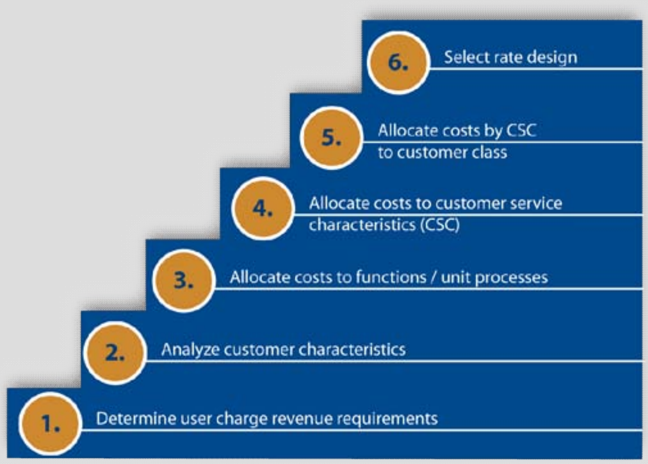
Steps Required to Conduct Cost-of-Service Study



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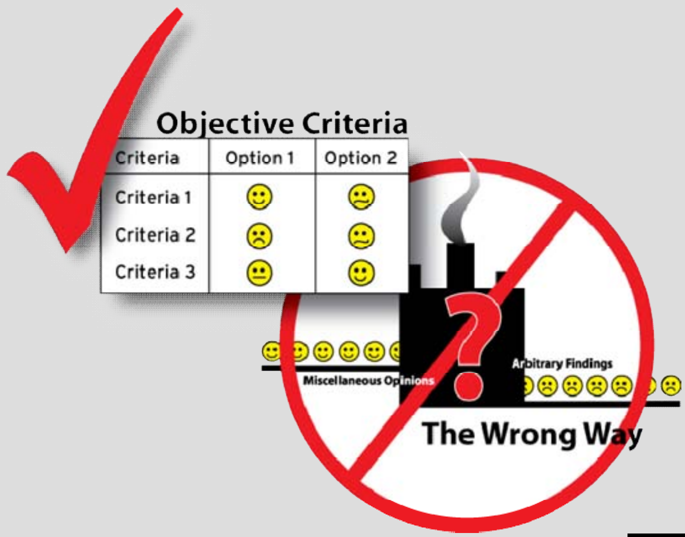
Objective Criteria Ensures Transparency



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Establish Evaluation Criteria

- Initial list of criteria prepared by Red Oak
- Criteria grouped by general area:
  - Implementation
  - Equity
  - Customer impacts
  - Conservation
  - Financial impacts

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Executive Team's Evaluation Criteria

Implementation	Equity	Customer	Conservation	Financial
Administrative Burden	Interclass	Affordability	Average-Day Savings	Revenue Sufficiency
Public Understanding	Intraclass	Economic Development	Peak-Season Savings	Revenue Stability
Public and Political Acceptance	Intergenerational	Rate Shock/ Volatility	Peak-Day Savings	Rate Stability
Risk of Implementation	Inside/ Outside City	Understandability of Bill	Sustainability	Rate Predictability
Legal Defensibility	Industry Standards			Financial Risk

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Sample Evaluation: Implementation Criteria

Implementation	Status Quo	Alt. 1	Alt. 2
Administrative Burden	+	+	-
Public Understanding	+	+	0
Public and Political Acceptance	-	0	0
Risk of Implementation	-	+	+
Legal Defensibility	0	-	+

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PIC Workshop Topics and Dates

- PIC Orientation (11/27)
- Revenue Requirements (12/17)
- Water/Wastewater Allocation Methodologies (1/7)
- I/I Allocations and Fire Charges (1/21)
- Composition of Industrial Class (2/4)
- Rate Design (2/18 and 3/3)

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PIC Member Questions, Discussion, and Comments

Public Involvement Committee Orientation Workshop
November 27, 2007

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Next Steps

- Written comments on tonight's meeting due 12/4 (to Mike Castillo)
- Revenue requirements issue paper to PIC (12/10)
- PIC Workshop (12/17)
  - Public involvement plan
  - Revenue requirements
- Written comments on revenue requirements (12/24)

Cost-of-Service Rate Study 2007

Public Involvement Committee Workshop 2: Revenue Requirements

Austin Water Utility

December 17, 2007

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Tonight's Agenda

1. Introductions
2. Ground rules for PIC Meeting
3. Decisions by Executive Team
4. PIC comments from last meeting
5. Presentation on revenue requirements
6. PIC member comments and discussion
7. Summary of decisions, agreements, and next meeting
8. Public comment period

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Ground Rules

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Ground Rules (Cont.)

7. A period for public comment will be provided at each meeting to allow input from non-committee members
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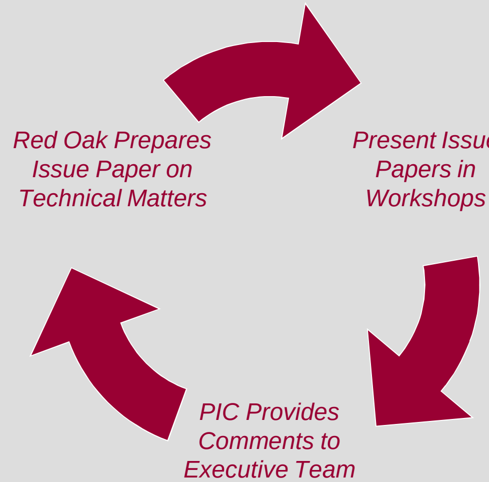
11. PIC committee members are responsible and strongly encouraged to share information with their constituents

Planned Information Process



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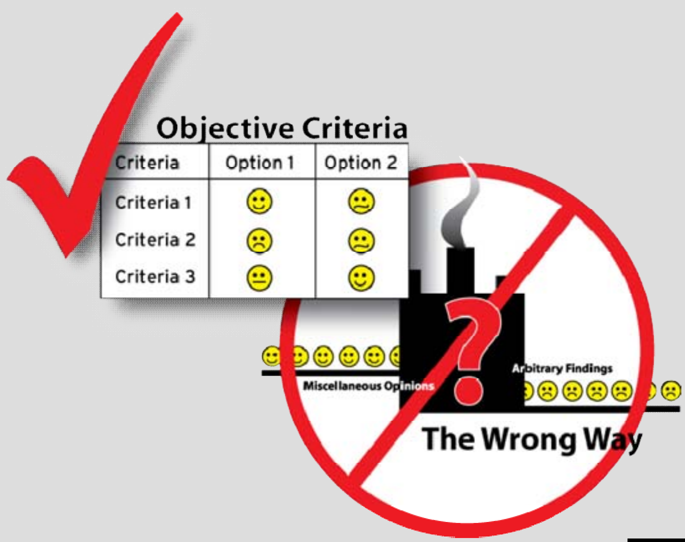
Objective Criteria Ensures Transparency



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Process for Developing Technical Recommendations

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Decisions by Executive Team

Public Involvement Committee Workshop
December 17, 2007

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Executive Team's Evaluation Criteria

Implementation	Equity	Customer	Conservation
Administrative Burden	Interclass	Affordability	Average-Day Savings
Public Understanding	Intraclass	Economic Development	Peak-Season Savings
Public and Political Acceptance	Inter-generational	Rate Shock/ Volatility	Peak-Day Savings
Risk of Implementation	Inside/ Outside City	Understand Bill	Sustainability
Legal Defensibility	Industry Standards		

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PIC Comments From Last Meeting

Public Involvement Committee Workshop
December 17, 2007

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Summarized Comments from PIC Members

- Additional meetings if the topics requires
- Release of computer model
- Evaluate customer-supplied daily meter data
- Proportionality of PIC membership
- Small commercial rate advocate
- Five-day turnaround for written comments
- Utility operational overview presentation
- Conservation incentives—especially for industrial customers
- Additional issue papers
  - Peaking factors
  - Sewage strength
- Definitions for customer classification

Determination of System Revenue Requirements

Public Involvement Committee Workshop
December 17, 2007

Policies Reviewed

1. Which is the most appropriate overall method?
2. How should future O&M be projected?
3. How should the rate of return be determined?
4. How should the rate base be valued?
5. How should construction work in progress be treated?

Revenue Requirements in the Broader Perspective

Comparison of Revenue Requirement Elements

Cash Basis	Utility Basis
O&M Costs	O&M Costs
Capital Expenditures	Deprecation and Return on Rate Base
Change in Fund Balance	Deprecation and Return on Rate Base
Debt Service	
Amortization of Debt	Depreciation Expense
Interest on Debt	Return on Rate Base
Taxes and Other Requirements	Taxes and Other Requirements

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Hypothetical Comparison of Methods

Item	Cash Basis	Utility Basis	Utility Basis with Cash Residual
O&M Expenses	$79,127,008	$79,127,008	$79,127,008
Debt Service	76,636,711		
Capital Expenditures	23,525,000		
Depreciation Expense		30,242,924	30,242,924
Return on Rate Base		81,362,654	69,918,787
Less: Other Revenue	(3,747,291)	(3,747,291)	(3,747,291)
	---------------	---------------	---------------
User Charge Revenue Requirements	$175,541,428	$186,985,295	$175,541,428

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Debt Service Coverage and Revenue Requirements

- Measures income relative to expenses
- Indicator of financial health and debt capacity
- Not an explicit component of revenue requirements—residual based on revenue requirements

Sample Debt Service Coverage Calculation

Line	Description	Value	Note
1	Gross Revenues	$ 180,000,000	
	Less:		
2	O&M (Excluding Depreciation)	80,000,000	

3	Net Revenues	$ 100,000,000	1 minus 2
4	Debt Service	$ 77,000,000	
5	Debt Service Coverage	1.30	3 divided by 4

Issues of Debt Service Coverage

- Bond covenants require 1.25 ratio
- City's financial policies require 1.50 ratio
- Impacts both utility and cash basis
  - Utility basis through return on rate base
  - Cash basis through capital expenditures and/or change in fund balances

Issue 1: Revenue Requirement Options

- Cash basis
- Utility basis
- Utility basis with cash residual

Role of Revenue Requirements in Consumer Protection

- Natural monopolies and economic regulation
- Economic regulation for municipal utilities provided by elected bodies
- For AWU, City Council provides consumer protection
- Outside-city customers often protected by long-term contracts

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Cash Basis

- Suited well for utility's subject to municipal budget requirements
- Relatively easy to administer
- Allows effective financial planning to mitigate rate shock
- Solves revenue sufficiency dilemma
- Uses readily available data
- Less able to align costs with users
  - Impact fees can mitigate
- Recommended by consulting team

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Utility Basis

- More appropriate for regulated utilities
- Provides external limitations on utility's profit
- Consumer protection provided by allowed rate of return
- In purest form may not be feasible for AWU
- Relatively more difficult to administer

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Utility Basis with Cash Residual

- Hybrid of two common approaches
- External rate of return applied to outside-city customers
- Residual rate of return calculated to meet cash basis needs—applied to inside-city customers
- Meets revenue sufficiency criteria
- Requires development of detailed asset data
- Consumer protection
  - Inside-city customers: City Council
  - Outside-city customers: limitation on rate of return

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Issue 2: Future O&M Projections

- Historical test year with adjustments for known and measurable changes
- Future budget

Historical Test Year

- Most recent completed fiscal year
- Adjusted for known and measurable changes
- Consistent with regulated utilities
- Abnormal weather may influence costs—increases complexity to integrate known and measurable changes

Future Budget

- Existing process—no additional work required
- Consistent with municipal utilities
- Consumer protection provided by budget process and elected officials
- Recommended by consulting team

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Issue 3: Determination of Rate of Return

- Weighted average cost of capital
- Indexed return
- Fixed return

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Background on Rate of Return

- Provides protection to utility and consumers
- Well established in industry
- Protect the value of the utility's owners—Takings clause of US Constitution

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Weighted Average Cost of Capital

- Weighted average rate of return
  - Weights based on debt/equity ratio
  - Effective interest rate and cost of equity
- Common for regulated utilities
- Complex financial analyses required to develop equity returns

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Indexed Return

- A flat equity premium added to common indices of interest rates
  - Bond Buyers Index
  - Long-term treasury bonds
- Similar to an adjustable rate mortgage
- Long-term interest rate indices less volatile than short-term

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Fixed Return

- Select return during contract negotiations
- Does not vary with market rates
- Similar to fixed rate mortgage
- Reduces volatility
- Recommended by consulting team

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Issue 4: Valuation of Rate Base

- Original cost
- Reproduction cost

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Background on Valuation

- Replacement cost of future facilities impacted by inflation
- Recent price changes are relatively more significant
- Regulated framework traditionally focused on capital recovery—not cash flow requirements

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Original Costs

- Based on accounting procedures
- Most common in the industry
- Rate base equals original cost less accumulated depreciation
- Ignores inflationary impacts
- Recommended by consulting team

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Reproduction Cost

- Requires calculation of reproduction costs
- ENR Construction Cost Index commonly used
- Rare in the industry
- Provides additional cash flow during periods of higher inflation
- Recognizes the cost of replacing facilities
- Normally has an inflation-free (i.e., real) rate of return

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Issue 5: Policy on Construction Work in Progress (CWIP)

- Capitalized interest
- Include in rate base

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Background on Construction Work in Progress

- Carrying costs of construction projects
  - Actual interest expense
  - Opportunity cost of alternative investment
- Length and complexity of projects
- Rate of return

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Capitalized Interest

- Standard accounting procedures
- *Allowance For Funds Used During Construction* (AFUDC)
- Provides more accurate allocation of capital costs over time—future users pay fair share
- More common in the industry
- Recommended by consulting team

Include in Rate Base

- Provides greater cash flow during construction of complex projects
- Reduces volatility by slowly increasing rate base
- Misaligns costs and users over time
- Less common in the industry

PIC Member Questions, Discussion, and Comments

Public Involvement Committee Workshop
December 17, 2007

Pathways to Lasting Solutions

Next Steps

- Written comments on tonight's meeting due 12/26 (to Mike Castillo)
- Cost Allocation issue paper to PIC (12/31)
- Next PIC Workshop (1/7)

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Pathways to Lasting Solutions

Summary Of Decisions, Agreements, And Next Meeting

Public Involvement Committee Workshop
December 17, 2007

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Public Comment

Public Involvement Committee Workshop
December 17, 2007

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Cost-of-Service Rate Study 2007

Public Involvement Committee
Workshop 3: Water Cost Allocations

Austin Water Utility

January 7, 2008

Pathways to Lasting Solutions

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Tonight's Agenda

1. Welcome
2. Review internet site
3. Overview of water system
4. Decisions by Executive Team
5. PIC comments from last meeting
6. Presentation on water cost allocations
7. PIC member comments and discussion
8. Overview of budget and financial policies (If time allows)
9. Summary of decisions and agreements
10. Public comment period

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Austin Service Area

- Estimated water served population
  - Current: ~840,000
  - 2060 Projected: ~2 million
- Approximately 200,000 current water accounts
- Current city limits land area: ~285 sq. mi.
- Utility service area boundary: ~537 sq. mi.
- Retail and wholesale, inside and outside city limits
- Wholesale service includes municipal utility districts, cities, and private companies

Austin WATER

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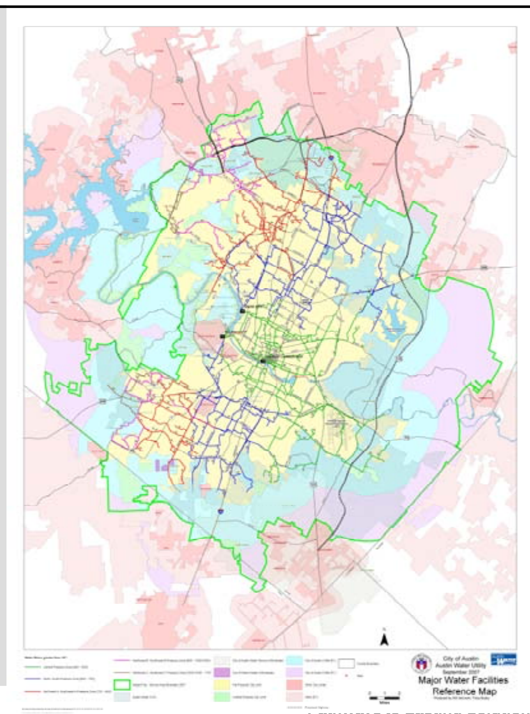

Austin WATER

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Capacity of Austin's Water System

- Treatment and Production: ~285 MGD
- Historical peak day pumpage: ~247 MGD (2005)
- Distribution:

  9 major pressure zones

  16 major pump stations

  18 major reservoirs (storage tanks)

  3,500 miles of pipe

Austin WATER

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Davis Water Treatment Plant

Austin WATER

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Water Treatment Plants

Davis WTP
- Existing Capacity 118 MGD
- Currently undergoing an improvements program (completion ~2013) to improve electrical system and other components

Ullrich WTP
- In final stages of wrapping up an expansion to 167 MGD

Green WTP
- Oldest Austin WTP 1925 - soon be decommissioned
- Future New Green WTP to pump water from Town Lake (long-term)

WTP #4
- Future WTP #4 to pump from Lake Travis
- Project underway with projected completion by Year 2014

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Decisions by Executive Team

Public Involvement Committee Workshop
January 7, 2008

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Executive Team Decisions

- Provide model inputs and outputs in Adobe Acrobat PDF only
- Provide model review in meeting
- Rely on City data only
- Added evaluation criterion (policy durability)

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Executive Team's Evaluation Criteria

Implementation	Equity	Customer	Conservation
Administrative Burden	Interclass	Affordability	Average-Day Savings
Public Understanding	Intraclass	Economic Development	Peak-Season Savings
Public and Political Acceptance	Inter-generational	Rate Shock/ Volatility	Peak-Day Savings
Risk of Implementation	Inside/Outside City	Understand Bill	Sustainability
Legal Defensibility	Industry Standards		
Policy Durability			

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PIC Comments From Last Meeting

Public Involvement Committee Workshop
January 7, 2008

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Comments and Requests from PIC Members

- Comments
  - Release of computer model
  - Hard copies of study work papers and model tables as available
  - Variable expenses based on historical cost per thousand gallons – built into model
  - Utility basis vs. cash basis – interclass cost allocations needed
  - Industrial class agrees with Red Oak recommendations for revenue requirements issues
- Requests
  - System overview
  - Budget and financial policies overview

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Water Cost Allocations and Fire Charges

Public Involvement Committee Workshop
January 7, 2008

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Policies Reviewed

1. Which is the most appropriate overall method?
2. What are the appropriate time steps?
3. Should private fire connections be charged for direct and indirect fire costs?
4. How should public fire cost be recovered?

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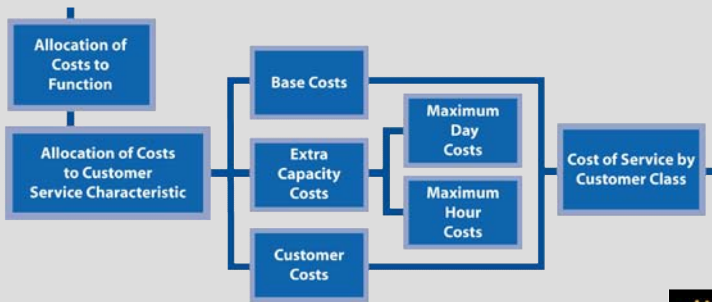
Water Cost Allocation in the Broader Perspective



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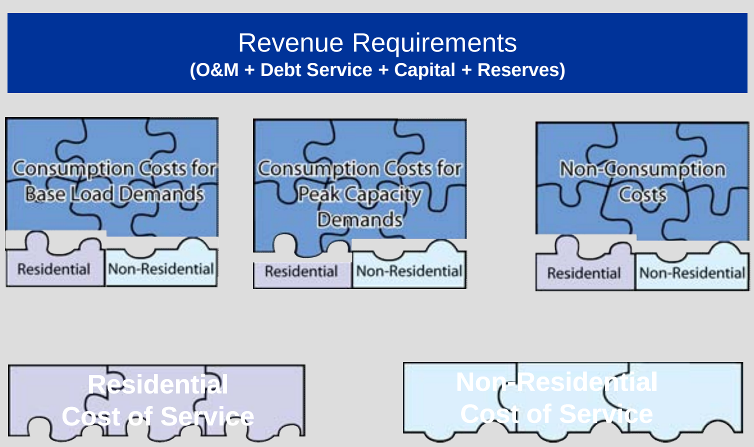
Cost-of-Service Goal



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Fire Costs

	Direct	Indirect
Private	Fire Lines Fire Hydrants Meter Reading	Oversizing of Facilities
Public	Public Fire Hydrants	Oversizing of Facilities
	Direct	Indirect

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Issue 1: Water Cost Allocation Options

- Commodity/Demand
- Base/Extra-Capacity*

* AWU's current methodology

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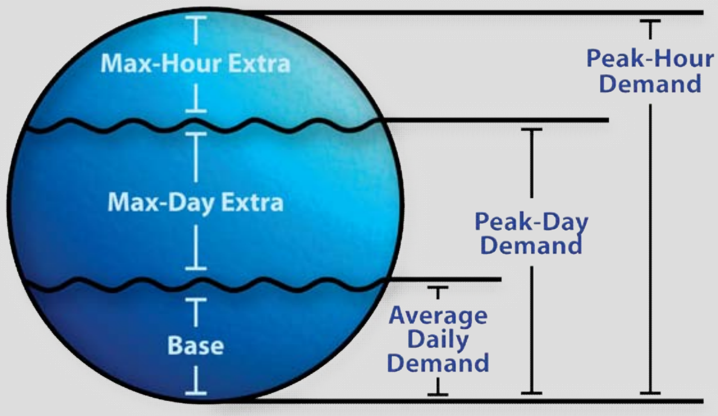
Commodity / Demand Method



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Commodity / Demand Method

- Encourages conservation during peak season and peak day
- Less equitable among customer classes
- May reduce costs to businesses and benefit economic development
- Less affordable for residential customers

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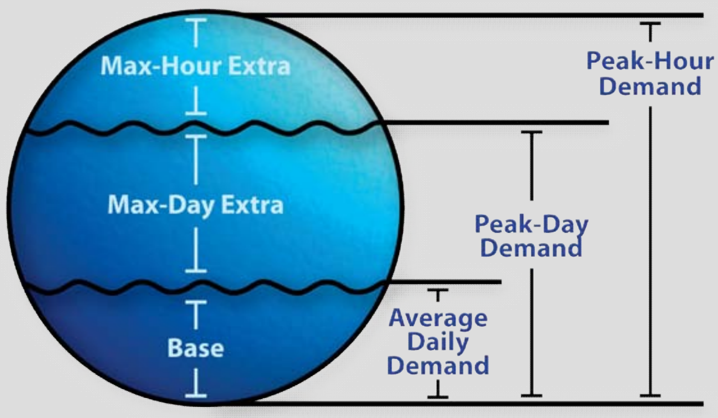
Base / Extra-Capacity Method



Base / Extra-Capacity Method

- AWU's current methodology
- More equitable among customer classes
- More affordable for residential customers
- May negatively impact business development
- Recommended by consulting team

Issue 2: Time Steps

- Peak-day and peak-hour demands*
- Peak-season, peak-day, and peak-hour demands

*AWU's current methodology

Peak-Day and Peak-Hour Demands

- More equitable among customer classes
- More equitable between inside city and outside city customers
- Less administrative burden
- Recommended by consulting team

Peak-Season, Peak-Day, and Peak-Hour Demands

- Additional administrative burden to add a new time step
- Reduces interclass and inside/ outside city equity

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Issue 3: Private Fire Connections Costs

- No separate charge for private fire connections*
- Charge private fire connections for direct fire costs only
- Charge private fire connections for direct and indirect fire costs

*AWU's current methodology

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Direct Costs Only

- Less administrative burden
- More publicly and politically acceptable
- More equitable
- Less affordable for residential customers
- Potential increase in economic development
- Recommended by consulting team

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Direct and Indirect Costs

- Increased administrative burden
- Less equitable
- Reduced costs allocated to residential customers
- Potential negative impact on business development

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Issue 4: Public Fire Costs

- Recover indirectly*
- Fixed charge based on property value
- Fixed charge based on fire customer class
- Fixed charge based on water meter size

*AWU's current methodology

Recover Indirectly

- Simplest to implement
- More conventional, aligned with industry standards
- Allocates more costs to residential customers
- Potential increase in economic development
- Simplest alternative for understandability of bill
- Reduced revenue stability
- Increased financial risk

Fixed Charge Based on Property Value

- Most difficult to implement
- Less acceptable – similar to *ad valorem* property tax
- Potential legal issues
- Increased interclass and intraclass equity
- Most affordable alternative
- Low bill understandability
- Improved revenue sufficiency
- Potential impact on conservation

Fixed Charge Based on Fire Customer Class

- Difficult to implement
- Less understandable to public
- Increased interclass and intraclass equity
- Less difficult to understand bill
- Potential impact on conservation

Fixed Charge Based on Water Meter Size

- Readily available data for implementation
- More conventional, aligned with industry standards
- Bill is easy to understand
- Potential impact on conservation
- Recommended by consulting team

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PIC Member Questions, Discussion, and Comments

Public Involvement Committee Workshop
January 7, 2008

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A DIVISION OF MALCOLM PIRNIE

Next Steps

- Written comments on tonight's meeting due 1/14 (to Mike Castillo)
- Wastewater Cost Allocation issue paper to PIC (1/15)
- Next PIC Workshop on TUESDAY (1/22)

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Summary Of Decisions and Agreements

Public Involvement Committee Workshop
January 7, 2008

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Overview of Budget and Financial Policies

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Public Comment

Public Involvement Committee Workshop
January 7, 2008

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Cost-of-Service Rate Study 2007

Public Involvement Committee
Workshop 4: Wastewater Cost Allocations

Austin Water Utility

January 22, 2008

Pathways to Lasting Solutions

REDOAK CONSULTING A DIVISION OF MALCOLM PIRNIE

Tonight's Agenda

1. Welcome
2. Overview of budget and financial policies
3. Overview of wastewater system
4. Decisions by Executive Team
5. PIC comments from last meeting
6. Presentation on wastewater cost allocations
7. PIC member comments and discussion
8. Summary of decisions and agreements
9. Public comment period

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Overview of Budget and Financial Policies

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Austin Service Area

- Estimated served population
  - Current: ~840,000
  - 2060 Projected: ~2 million
- Approximately 190,000 current accounts
- Current city limits land area: ~285 sq. mi.
- Utility service area boundary: ~537 sq. mi.
- Retail and wholesale, inside and outside city limits
- Wholesale service includes municipal utility districts, cities, and private companies

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Wastewater Treatment

- Two major wastewater treatment plants
- Treatment capacity: 150 MGD
  - South Austin Regional WWTP: 75 MGD
  - Walnut Creek WWTP: 75 MGD
- Discharge water quality consistently better than required by TCEQ permits
- Currently return flow wastewater discharges average roughly 100,000 acre-ft./year
- Govalle WWTP built in 1937 was decommissioned in late 2006
- System has ~2,500 mi. of wastewater main

Austin WATER

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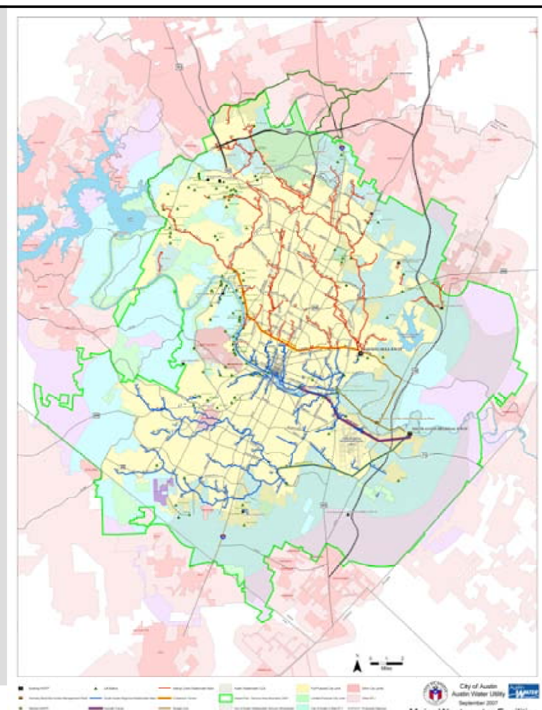

Austin WATER

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Wastewater Treatment Facilities

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Decisions by Executive Team

Public Involvement Committee Workshop
January 22, 2008

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Executive Team Decisions

- *Revenue Requirements Issue 1* - cash basis will be used
- *Revenue Requirements Issue 2* - future budgets will be used
- *Revenue Requirements Issues 3-5* – not applicable because cash basis will be used

PIC Comments From Last Meeting

Public Involvement Committee Workshop
January 22, 2008

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Comments from Individual PIC Members

- Base/Extra-Capacity and Commodity/Demand methods of allocating water costs appear to produce same results
- A portion of capital and O&M costs associated with water transmission and distribution system should be allocated to all water usage, not peak only
- Economies of scale should be considered, especially for pipelines and pump stations
- Fire charges based on meter size may not accurately represent fire flow needs
- Recommend use of demand data collected by industrial customers
- Disagree with the creation of separate fire charges

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Requests from PIC Members

- More innovative and sophisticated method of allocating capital costs should be developed to fairly allocate costs *and benefits* of facilities to customer classes
- Detailed customer class peak demand calculations
- Fire charges should be studied further outside the PIC cost-of-service process
- Model outputs should be provided in Excel (as values with no formulas), not Adobe Acrobat PDF

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Wastewater Cost Allocations

Public Involvement Committee Workshop
January 22, 2008

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Wastewater Policies Reviewed

1. Which is the most appropriate overall method?
2. What are the appropriate customer service characteristics?
3. How should I/I be estimated and allocated?

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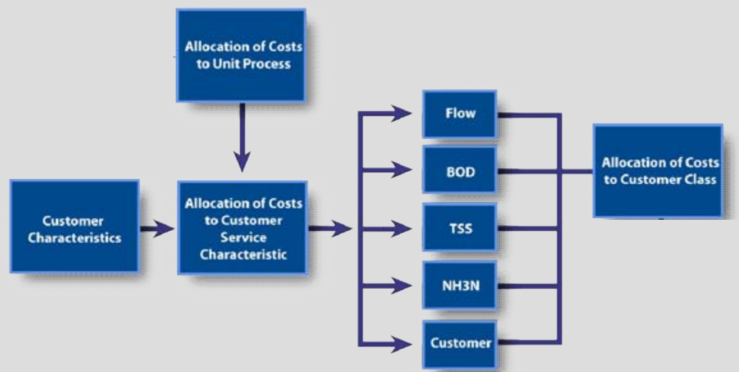
Wastewater Cost Allocation in the Broader Perspective



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Issue 1: Wastewater Cost Allocation Options

- Design Basis*
- Functional Basis
- Hybrid Approach

* AWU's current methodology

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Design Basis

- AWU's current methodology
- Allocates costs based on engineering design criteria
- Less administrative burden
- Least implementation risk
- Potential positive impact on conservation due to increased unit cost for wastewater treatment and disposal

Functional Basis

- Allocates costs based on operational or functional purposes
- Minimal administrative burden

Hybrid Approach

- Allocates O&M costs based on function and capital costs based on design
- More acceptable to public and political officials
- Increased administrative burden
- Improved interclass and intraclass equity
- Improved sustainability
- Recommended by consulting team

Issue 2: Customer Service Characteristics

- Flow, BOD, and TSS only*
- Add Total Kjeldahl Nitrogen (TKN)
- Add Phosphorus

*AWU's current methodology

Flow, BOD, and TSS Only

- AWU's current methodology
- Least administrative burden
- Most common approach

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Add Total Kjeldahl Nitrogen (TKN)

- Difficult to implement without additional data
- Likely to become increasingly important in future (policy durability)
- Improved interclass and intraclass equity
- Improved sustainability
- Recommended by consulting team (once sufficient data is available from industrial pretreatment sampling program)

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Add Phosphorus

- Difficult to implement without additional data
- Likely to become increasingly important in future (policy durability)
- Improved interclass and intraclass equity
- Improved sustainability
- Recommended by consulting team (once sufficient data is available from industrial pretreatment sampling program)

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Issue 3: I/I Estimation and Allocation

- Combined connections and volume*
- Contributed wastewater volume
- Number of connections
- Land area

*AWU's current methodology

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Combined Connections and Volume

- AWU's current methodology (50% connections, 50% volume)
- Minimal administrative burden
- Less affordable for residential customers
- Potential increased economic development

Contributed Wastewater Volume

- Easy to implement
- Easy to understand
- More affordable for residential customers
- Potential negative impact on economic development
- Recommended by consulting team

Number of Connections

- Easy to implement
- Easy to understand
- Less affordable for residential customers
- Potential increase in economic development

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Land Area

- Greatest administrative burden
- Greatest risk of implementation
- Least common approach

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PIC Member Questions, Discussion, and Comments

Public Involvement Committee Workshop
January 22, 2008

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Next Steps

- Written comments on tonight's meeting due 1/29 (to Mike Castillo)
- Customer Characteristics issue paper to PIC (1/28)
- Next PIC Workshop on MONDAY (2/4)

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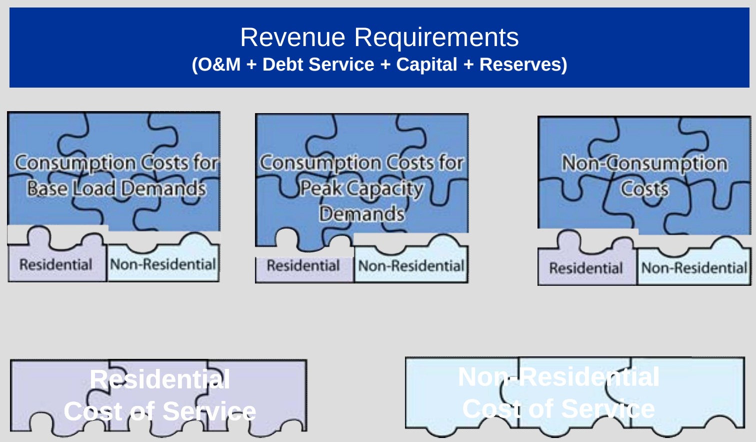
Summary Of Decisions and Agreements

Public Involvement Committee Workshop
January 22, 2008

Public Comment

Public Involvement Committee Workshop
January 22, 2008

Cost-of-Service Goal



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Cost-of-Service Rate Study 2007

Public Involvement Committee
Workshop 5: Customer Classifications

Austin Water Utility

February 19, 2008

Tonight's Agenda

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Presentation on customer classifications
5. PIC member comments and discussion
6. Summary of decisions and agreements
7. Public comment period

Decisions by Executive Team

Public Involvement Committee Workshop
February 19, 2008

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Executive Team Decisions

- *Water Cost Allocations Issue 1* – Base / Extra-Capacity Method will be used
- *Water Cost Allocations Issue 2* – Peak day and peak hour will be used to allocate extra capacity costs
- *Water Cost Allocations Issue 3* – a separate charge will not be developed for private fire connections
- *Water Cost Allocations Issue 4* – deferred (public fire charges)

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PIC Comments From Last Meeting

Public Involvement Committee Workshop
February 19, 2008

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Comments from PIC Members

- I/I costs should not be allocated to wholesale and industrial customers because these customers are metered and typically discharge into interceptors
- I/I costs should be allocated based on customer connections, not volume
- AWU should use actual measured BOD and TSS loadings to determine allocations to customer classes
- Some PIC members supported the introduction of TKN and phosphorous, others did not
- Additional information is requested following detailed application of the allocation methodologies

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Customer Classifications

Public Involvement Committee Workshop
February 19, 2008

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Purpose of Customer Classification

- Identify groups of relatively similar customers that share common costs of service
- Allow for effective rate design
- Other management requirements

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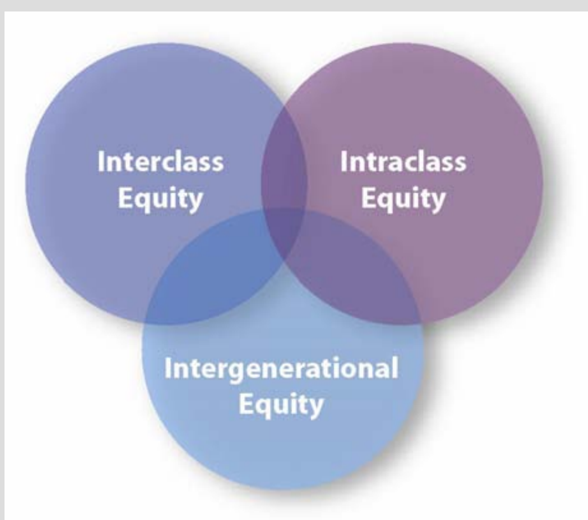
Factors for Classifying Customers

- General service requirements
- Demand patterns or usage characteristics
- Geographical locations for wholesale and outside-city customers

Customer Classification and Equity



Rate Design and Customer Classes

- Rate design and classification should be consistent to enhance equity
- Provide conservation incentives
- Complex rate designs may enhance equity with fewer classes

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Wastewater Rate Designs and Customer Classification

- Surcharge approach
- Strength-based classification or Quantity/Quality approach

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Common Customer Classes

- Single-family residential
- Multifamily residential
- Commercial
- Industrial
- Wholesale

Less Common Classes

- Institutional
- Schools
- Parks
- Hospitals
- Business parks
- Government

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Estimating Customer Characteristics

- Water
  - Peak-day factor
  - Peak-hour factor
- Wastewater
  - BOD concentrations
  - TSS concentrations

Prorating Peaking Factors

$$Class\ Peak\ Day\ Factor = \left(\frac{Class\ Peak\ Month\ Demand}{Class\ Average\ Month\ Demand}\ X\ \frac{System\ Peak\ Day\ Demand}{System\ Peak\ Month\ Demand} \right)$$

$$Class\ Peak\ Hour\ Factor = \left(\frac{Class\ Peak\ Month\ Demand}{Class\ Average\ Month\ Demand}\ X\ \frac{System\ Peak\ Hour\ Demand}{System\ Peak\ Month\ Demand} \right)$$

Preliminary Findings on Peaking Factors

Customer Class	Estimated Peak-Season Factor	Estimated Peak-Day Factor	Estimated Peak-Hour Factor
Inside City Residential	1.28	1.64	2.54
Inside City Multi-Family	1.11	1.36	2.11
Inside City Commercial	1.23	1.56	2.41
Inside City Industrial	1.06	1.28	1.98
Inside City Golf Courses	1.52	2.20	3.42
Utility	1.05	1.41	2.18
Outside City Residential	1.29	1.64	2.55
Outside City Multi-Family	1.16	1.42	2.20
Outside City Commercial	1.32	1.77	2.74
Outside City Golf Course	0.67	8.39	13.00
Anderson Mill	1.20	1.47	2.27
Creedmore-Maha	1.18	1.55	2.40
High Valley	1.13	1.35	2.09
Lost Creek	1.34	1.77	2.75
Manor, City of	1.12	5.08	7.88
Manville WSC	1.33	1.75	2.71
Marsha Water	1.16	1.39	2.15
Nighthawk	1.14	1.36	2.11
North Austin MUD	1.31	1.63	2.53
Northtown MUD	1.24	1.53	2.37
Rivercrest	1.31	1.65	2.55
Rollingwood	1.42	1.94	3.01
Shady Hollow	1.40	1.91	2.96
Sunset Valley MUD	1.37	1.66	2.57
Water District 10	1.34	1.76	2.72
Wells Branch MUD	1.21	1.46	2.26
Windermere	2.06	5.05	7.82
	------------	------------	------------
System-Wide Peaking Factors	1.22	1.55	2.40

Mass-Balance Analysis

- Use known and estimated concentrations to assign loadings to particular classes
- Balance the residual loadings to the other class(es)
- Published data by economic activity is often used

Preliminary Findings for Austin

Treatment Plant	Inflow (MG)	BOD Lbs	BOD mg/L	TSS Lbs	TSS mg/L
Walnut	20,795	23,573,719	136	34,652,639	200
South Austin Regional	15,845	30,578,479	231	40,206,260	304
Total System	36,641	54,152,198	177	74,858,898	245
Industrial Customers					
Freescale Semiconductor, Inc.	588.5	446,864	91	63,838	13
Freescale Semiconductor, Inc.	323.2	318,282	118	234,665	87
Samsung Austin Semiconductor	464.6	279,125	72	116,302	30
Spansion LLC	607.9	106,520	21	65,941	13
University of Texas	0.9	604	80	785	104
University of Texas	26.8	8,060	36	3,582	16
Total Industrial Customers	2,012	1,159,455	69	485,114	29
System Less Industrial Customers	34,629	52,992,743	183	74,373,785	258

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Policies Reviewed

1. Should the large-volume customer class be disaggregated?
2. Should the threshold for inclusion in the large-volume class be adjusted?
3. Should an irrigation customer class be created?

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Issue 1: Disaggregation of Large-Volume Class

- Maintain one class*
- Separate classes for each large-volume customer

* AWU's current methodology

Historical Monthly Peaking Factors

Industrial Customers	2003	2004	2005	2006	Average Peak Factor
Applied Materials	1.54	1.34	2.20	1.56	1.66
Freescale	1.24	1.15	1.11	1.82	1.33
Samsung Austin Semiconductor	1.18	1.13	1.31	1.22	1.21
Sematech	1.12	1.14	1.23	1.46	1.24
Spansion	1.11	1.23	1.18	1.18	1.17
University Of Texas	1.33	1.26	1.34	1.53	1.37
Hospira Inc	2.72	2.07	1.40	1.35	1.88
	-----------------	-----------------	-----------------	-----------------	-----------------
Average	1.46	1.33	1.39	1.45	1.41
Standard Deviation	0.573	0.333	0.368	0.222	0.265

Maintain One Large-Volume Class

- AWU's current methodology
- Less administrative burden
- More common in the industry
- Less equitable among large-volume customers (intraclass equity)

Disaggregate Large-Volume Class

- Slightly higher administrative burden
- Improves intraclass equity
- Less common in the industry
- Potential increase in water conservation
- Recommended by consulting team

Issue 2: Large-Volume Class Threshold

- 85 MG per year*
- 100 MG per year
- 50 MG per year

*AWU's current methodology

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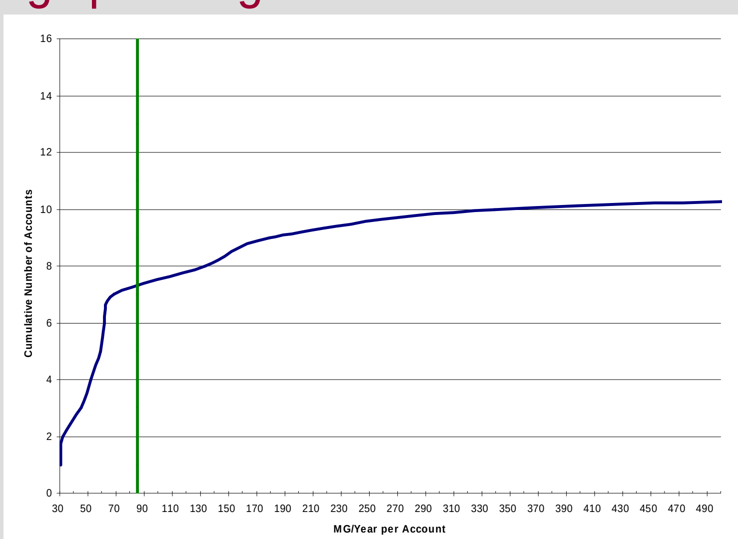
Usage per Large-Volume Customer



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Issue 2 Evaluation

- Reducing threshold may increase administrative burden
- Reducing threshold may increase water conservation
- Consulting team recommends maintaining threshold of 85 MG per year

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Issue 3: Irrigation Class

- Do not implement irrigation class*
- Implement irrigation class

*AWU's current methodology

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No Irrigation Class

- AWU's current methodology
- Less administrative burden
- May benefit customers without irrigation meter
- May not encourage additional water conservation
- Increased revenue stability
- New billing system may allow rate design that makes separate irrigation class less important
- Recommended by consulting team

Implement Irrigation Class

- Increased administrative burden
- More acceptable to public and elected officials—consistent with Water Conservation Task Force recommendations
- May increase or decrease intraclass equity
- Possible rate shock for irrigation customers
- Increased water conservation
- Reduced revenue stability

PIC Member Questions, Discussion, and Comments

Public Involvement Committee Workshop
February 19, 2008

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Next Steps

- Written comments on tonight's meeting due 2/26 (to Mike Castillo)
- Rate Design issue paper to PIC on 2/25
- Next PIC Workshop on 3/3 (Monday)

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Summary of Decisions and Agreements

Public Involvement Committee Workshop
February 19, 2008

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Public Comment

Public Involvement Committee Workshop
February 19, 2008

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Cost-of-Service Rate Study 2007

Public Involvement Committee Workshop 6: Rate Design

Austin Water Utility

March 3, 2008

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Tonight's Agenda

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Presentation on rate design
5. PIC member comments and discussion
6. Summary of decisions, agreements, and next steps
7. Public comment period

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Decisions by Executive Team

Public Involvement Committee Workshop
March 3, 2008

Executive Team Decisions

- *Wastewater Cost Allocations Issue 1* – Hybrid Method will be used (O&M allocated by function and capital allocated by design)
- *Wastewater Cost Allocations Issue 2* – Flow, BOD, and TSS will be used to allocate wastewater costs
- *Wastewater Cost Allocations Issues 3* –deferred (I/I cost allocations)

PIC Comments From Last Meeting

Public Involvement Committee Workshop
March 3, 2008

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Comments from PIC Members

- Industrial and multifamily representatives agree with disaggregation of large-volume customer class
- Industrial and multifamily representatives would like large-volume customer class threshold to decrease to 30 MG per year
- Commercial, industrial, and multifamily representatives agree that a separate customer class should not be created for irrigation customers

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Requests from PIC Members

- Glossary of terms
- More detail on allocation of extra-capacity costs to customer classes
- Tables from Issue Paper #4 in Excel format
- More detailed explanation of tables and figures in issue papers

Rate Design

Public Involvement Committee Workshop
March 3, 2008

Rate Structure Components

- Fixed Charge
- Variable Charge

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Types of Fixed Charges

- Service or customer charge
- Meter charge
  - Fire charge
  - Demand charge
- Minimum charge

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Common Water Rate Structures

- Uniform
- Declining Block
- Inclining Block
- Seasonal

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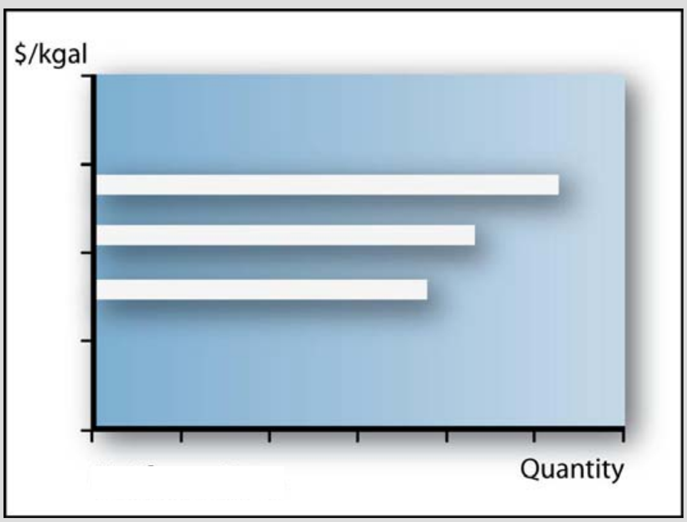
Uniform Rate Structure



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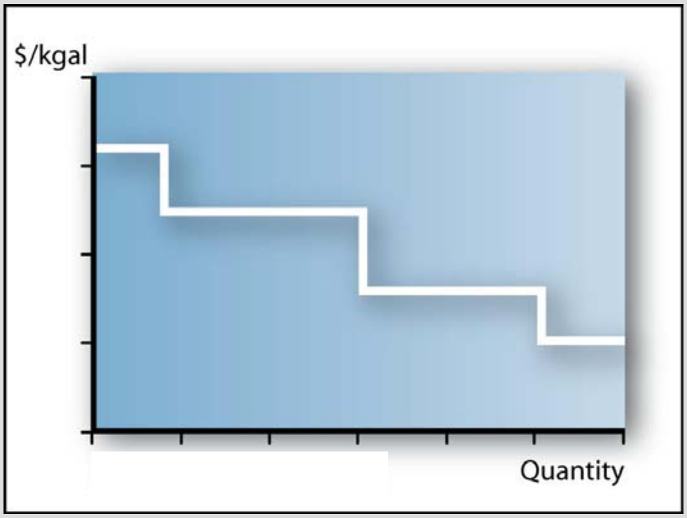
Declining-Block Rate Structure



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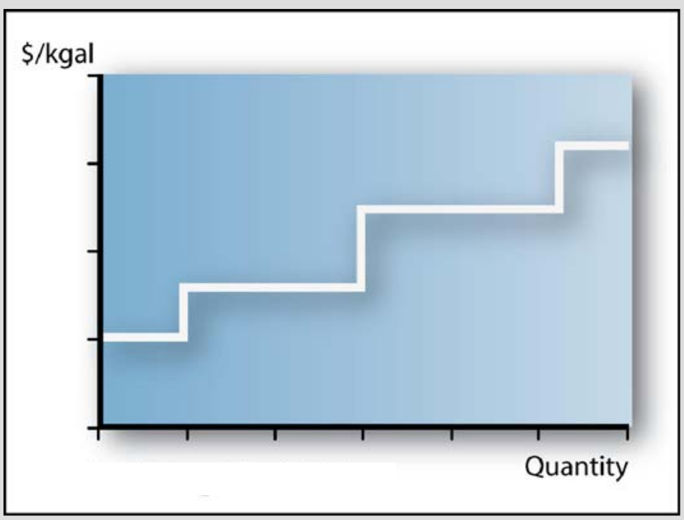
Inclining-Block Rate Structure



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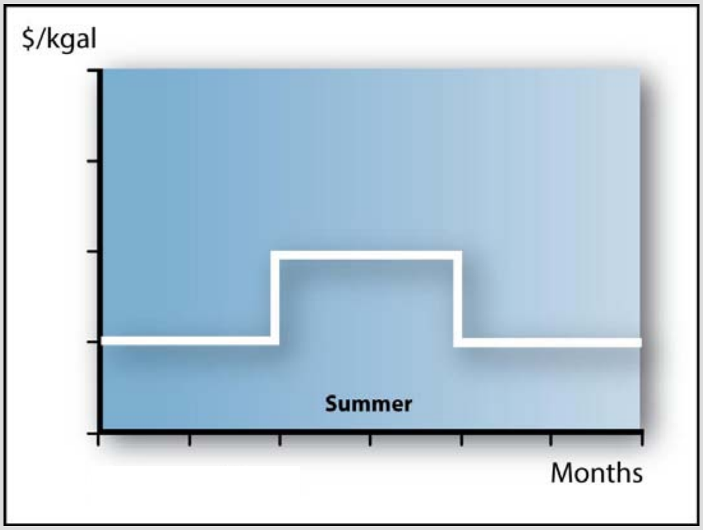
Seasonal Rate Structure



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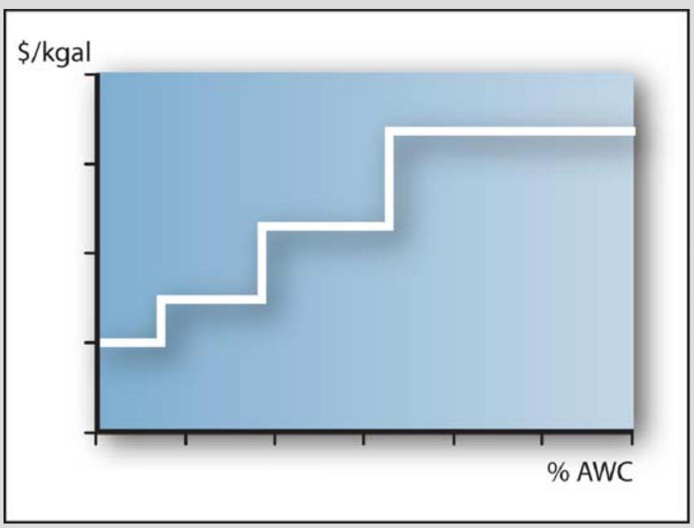
Excess-Use Rate Structure



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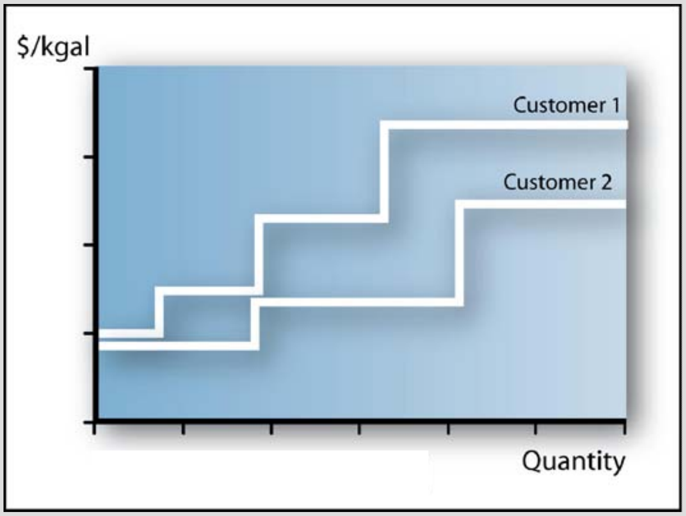
Water-Budget Rate Structure



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Common Wastewater Rate Structures

- Quantity/quality rates
- Extra-strength surcharges

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Policies Reviewed

1. What is the best method for providing a subsidy to low-income customers?
2. How should AWU recover a subsidy to low-income customers?
3. Should AWU introduce a 5th block for single-family residential customers?
4. What conservation incentives should exist for wholesale customers?
5. How should customers with separate irrigation meters be treated?

Issue 1: Low-Income Subsidy

- Discounted rates for Blocks 1 and 2*
- Waive the fixed charge for qualified low-income customers

*AWU's current methodology

Discounted Rates for Blocks 1 and 2

- AWU's current methodology
- No additional effort to implement
- Discount applies to all customers regardless of income
- More common in the industry
- Resulting higher block 3 and 4 rates increase revenue volatility

Waived Fixed Charge

- Potential administrative burden
- Easy to understand
- More affordable for large families
- Reduced likelihood of rate shock
- May decrease rates in upper blocks
- Increased rate stability
- Recommended by consulting team

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Issue 2: Recovery of Low-Income Subsidy

- Recover the subsidy within the single-family residential class*
- Recover the subsidy from all customer classes

*AWU's current methodology

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Recover Subsidy within Residential Class

- AWU's current methodology
- Understood by public
- Maintains interclass equity
- Less affordable for residential customers who do not qualify
- Encourages conservation within residential customer class

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Subsidized by All Customer Classes

- May be more acceptable to public
- Improves intraclass equity
- Decreases rate volatility
- May improve revenue sufficiency and stability
- Recommended by consulting team

Issue 3: Fifth Block for Residential

- Current 4-block structure*
- 5-block structure
- Revised 4-block structure

*AWU's current methodology

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Current 4-block Structure

- AWU's current methodology
- Easy to understand
- Less administrative burden
- Less potential for rate shock
- Less incentive for conservation

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5-block Structure

- Recommended by Water Conservation Task Force
- Intended to encourage conservation
- Increased administrative burden
- May be difficult to understand
- Increased potential for rate shock
- Decreased financial stability

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Revised 4-block Structure

- Can create similar incentive for conservation as 5-block structure
- Easy to understand
- Increased potential for rate shock
- Easy to implement
- Decrease financial stability
- Recommended by consulting team

Issue 4: Conservation Incentives for Wholesale Customers

- Uniform rates by wholesale class*
- Seasonal rates
- Excess-use rates

*AWU's current methodology

Uniform Rates

- AWU's current methodology
- Least administrative burden
- Low risk of implementation
- Most common rate structure for wholesale customers
- Less revenue volatility
- Recommended by consulting team

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Seasonal Rates

- Low administrative burden
- Moderate risk of implementation
- May increase incentive for conservation
- Increase revenue volatility
- Increase potential for rate shock
- More politically acceptable

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Excess-Use Rates

- Greatest administrative burden
- Highest risk of implementation
- May increase incentive for conservation
- Increase revenue volatility
- Increase potential for rate shock
- More politically acceptable

Issue 5: Irrigation Rates

To be presented in
Irrigation Rates Issue Paper and
at Rate Design Workshop 2
on March 17, 2008

PIC Member Questions, Discussion, and Comments

Public Involvement Committee Workshop
March 3, 2008

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Summary Of Decisions, Agreements, And Next Steps

Public Involvement Committee Workshop
March 3, 2008

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Next Steps

- Written comments on tonight's meeting due 3/10 (to Mike Castillo)
- Irrigation Rates issue paper to PIC (3/10)
- Next PIC Workshop (3/17)

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Public Comment

Public Involvement Committee Workshop
March 3, 2008

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Cost-of-Service Rate Study 2007

Public Involvement Committee Workshop 7: Irrigation Rates

Austin Water Utility

March 17, 2008

Pathways to Lasting Solutions

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Tonight's Agenda

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Presentation on irrigation rates
5. PIC member comments and discussion
6. Summary of decisions, agreements, and next steps
7. Public comment period

2

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Decisions by Executive Team

Public Involvement Committee Workshop
March 17, 2008

Executive Team Decisions

- *Customer Classifications Issue 1* – Disaggregate large-volume customer class
- *Customer Classifications Issue 2* – Deferred (large-volume class threshold)
- *Customer Classifications Issue 3* – Deferred (irrigation customer class)

PIC Comments From Last Meeting

Public Involvement Committee Workshop
March 17, 2008

Comments from PIC Members

- Commercial representative disagrees with the recommendation to waive the fixed charge for low income customers
- Commercial representative disagrees with the recommendation to recover the low income subsidy from all classes
- Commercial representative prefers a seasonal rate structure

Comments from PIC Members

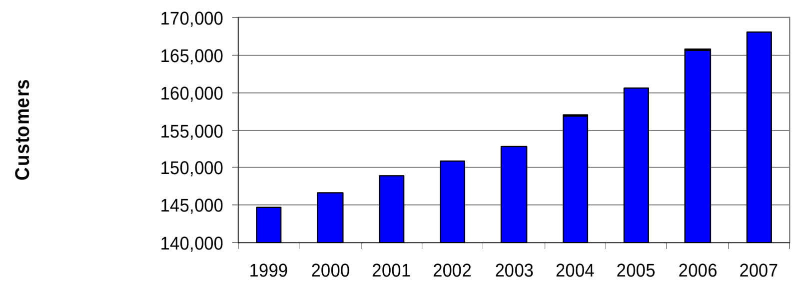
- Commercial and industrial representatives agree with the revised 4-block rate structure for single family residential customers
- Industrial representative agrees with:
  - Waiving the fixed charge for low income customers
  - Recovering the low income subsidy from all classes
  - Charging wholesale customers a uniform rate

Irrigation Rates

Public Involvement Committee Workshop
March 17, 2008

Single Family Irrigation Customers

INSIDE CITY SINGLE FAMILY
Total Customers vs Irrigation Only Customers



	Sep-99	Sep-00	Sep-01	Sep-02	Sep-03	Sep-04	Sep-05	Sep-06	Sep-07
Total Customers With Irrigation	0	0	0	0	14	25	34	117	137
Total Customers	144,711	146,716	148,916	150,934	152,828	156,924	160,562	165,650	167,994

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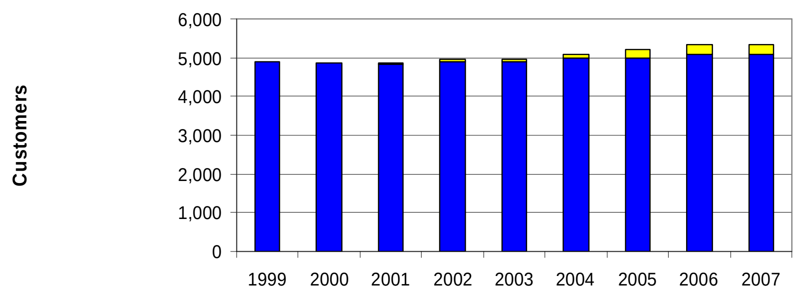
Multifamily Irrigation Customers

INSIDE CITY MULTI-FAMILY
Total Customer Accounts vs Irrigation Only Accounts



	Sep-99	Sep-00	Sep-01	Sep-02	Sep-03	Sep-04	Sep-05	Sep-06	Sep-07
Total Customers With Irrigation	2	6	25	41	74	96	221	261	274
Total Customers	4,892	4,853	4,832	4,905	4,897	4,986	5,005	5,079	5,074

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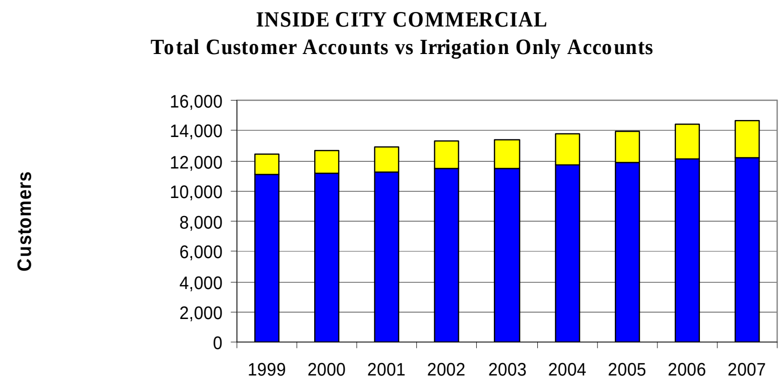
Commercial Irrigation Customers



	Sep-99	Sep-00	Sep-01	Sep-02	Sep-03	Sep-04	Sep-05	Sep-06	Sep-07
Total Customers With Irrigation	1,360	1,517	1,664	1,824	1,965	2,088	2,118	2,292	2,458
Total Customers	11,108	11,186	11,286	11,467	11,447	11,707	11,857	12,140	12,203

Policies Reviewed

1. How should excess revenues from higher irrigation rates be used?
2. What is an appropriate level for irrigation rates?
3. Should residential irrigation meters receive water at Block 1 and 2 rates?

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Issue 1: Excess Revenues from Irrigation Rates

- Reduce the indoor water rate for irrigation customers
- Reduce rates for all customers
- Set irrigation rate at cost of service (no excess revenues)
- Set aside for other designated purposes
- Do not establish an irrigation rate*

*AWU's current methodology

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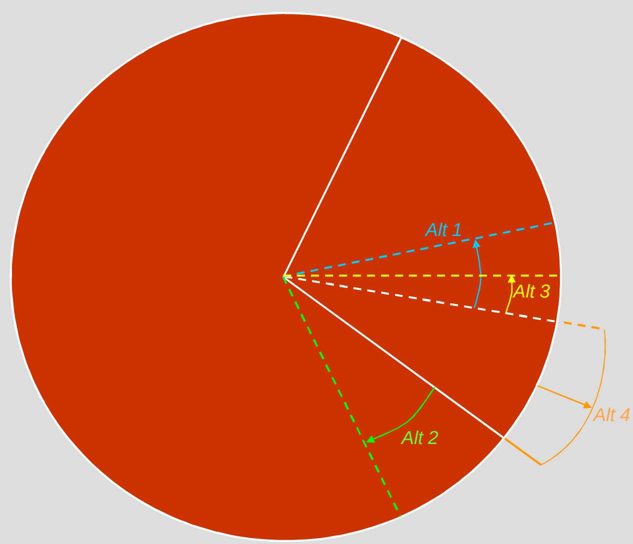
Overview of Issue 1 Alternatives



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Impacts for Two Identical Commercial Customers

Customer Classes	Current	Alternative Customer Classification: One Class	Alternative Customer Classification: Two Classes	Difference in Classifications
Rates				
Customer A (Combined Meter)	$3.47	$3.29	$3.47	($0.18)
Customer B (Separate Meters)				
Indoor	$3.47	$3.29	$2.13	$1.16
Irrigation	$3.47	$7.63	$7.63	$0.00
Bills				
Customer A (Combined Meter)	$2,765	$2,614	$2,765	($151)
Customer B (Separate Meters)				
Indoor	$2,167	$2,047	$1,416	$632
Irrigation	$599	$1,350	$1,350	$0
	--------------	--------------	--------------	--------------
Separate Meter Total	$2,765	$3,397	$2,765	$632
Difference in Bills	$0	($783)	$0	

Alternative 1: Reduced Indoor Water Rate for Irrigation Customers

- Requires creation of irrigation customer class
- Increased administrative burden
- Potential for high interclass equity
- Potential for low intraclass equity
- May encourage additional conservation
- Reduced revenue stability

Alternative 2: Reduced Rates for All Customers

- May be less acceptable to public and political leadership
- Least legally defensible
- Greatest potential for interclass inequity
- Potential for intraclass inequity
- May benefit residential customers
- Reduced revenue stability

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Alternative 3: Cost of Service Irrigation Rate

- Requires creation of irrigation customer class
- Increased administrative burden
- Highest interclass equity
- Low rate shock

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Alternative 4: Set Aside for Designated Purpose

- May not be publicly acceptable
- Potential interclass inequity
- Potential for low intergenerational equity
- Increased conservation
- Increased revenue stability

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Alternative 5: No Irrigation Rate

- AWU's current methodology
- Least administrative burden
- Inconsistent with Water Conservation Task Force recommendations
- High interclass equity
- No rate shock
- No additional conservation incentive
- Recommended by consulting team until excess-use rates can be implemented

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Issue 2: Appropriate Level for Irrigation Rates

- Equal to highest residential block rate
- Equal to cost of service
- No irrigation rate*

*AWU's current methodology

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Highest Residential Block Rate

- Water Conservation Task Force recommendation
- Interclass and intraclass inequities
- Most affordable for residential customers
- Significant rate shock
- Greatest conservation incentive
- Increased revenue volatility

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Cost-of-Service Rate

- Greatest administrative burden
- Potentially more difficult to understand
- Most defensible
- Greatest interclass and intraclass equity
- Potential for rate shock
- Recommended by consulting team

No Irrigation Rate

- AWU's current methodology
- Potentially less affordable for residential customers
- Least conservation incentive

Issue 3: Residential Irrigation Usage at Blocks 1 and 2

- Price all residential irrigation water at Block 3 and above
- Provide Blocks 1 and 2 discounted water*

*AWU's current methodology

Irrigation Usage Priced at Block 3 and Above

- Consistent with Water Conservation Task Force recommendations
- Increased interclass and intraclass equity
- More compliant with industry standard
- Increased conservation incentive
- Recommended by consulting team

Discounted Water in Blocks 1 and 2

- AWU's current methodology
- Slightly less revenue volatility

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PIC Member Questions, Discussion, and Comments

Public Involvement Committee Workshop
March 17, 2008

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Summary of Decisions, Agreements, And Next Steps

Public Involvement Committee Workshop
March 17, 2008

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Next Steps

- Written comments on tonight's meeting due 3/24 (to Mike Castillo)
- Next PIC Workshops
  - March 31
  - April 21

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Public Comment

Public Involvement Committee Workshop
March 17, 2008

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Cost-of-Service Rate Study 2007

Public Involvement Committee Workshop 8: Model Preview

Austin Water Utility

March 31, 2008

Tonight's Agenda

1. Welcome
2. Decisions by Executive Team
3. PIC comments from last meeting
4. Preview of cost-of-service model
5. Discuss desired "what if" scenarios
6. Public comments

Decisions by Executive Team

Public Involvement Committee Workshop
March 31, 2008

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March 18 Executive Team Decisions

- *Rate Structures Issue 1* – Waive fixed charge for low-income customers
- *Rate Structures Issue 2* – Recover low-income subsidy from all retail customer classes
- *Rate Structures Issue 3* – Deferred (5th block for residential customer class)
- *Rate Structures Issue 4* – Deferred (wholesale class conservation rates)

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Summary of Decisions by Executive Team

Public Involvement Committee Workshop
March 31, 2008

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PIC Comments From Last Meeting

Public Involvement Committee Workshop
March 31, 2008

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Comments from PIC Members

- Commercial and industrial representatives recommend that AWU implement an irrigation rate
- Commercial representative suggests that AWU use excess revenues from irrigation customers to install additional irrigation meters
- Industrial representative suggests that AWU use excess revenues from irrigation customers to improve reclaimed water system

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Comments from PIC Members

- Commercial and industrial representatives recommend that the commercial irrigation rate be set at the highest residential block rate
- Commercial and industrial representatives agree with recommendation to charge residential irrigation customers at Block 3 rate for all usage in Blocks 1-3

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Preview of Cost-of-Service Model

Public Involvement Committee Workshop
March 31, 2008

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Discuss Desired "What If" Scenarios

Public Involvement Committee Workshop
March 31, 2008

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Identified "What If" Scenarios

- Executive Team
  - Fire protection (recover indirectly vs. fixed charge based on meter size)
  - Residential rate structure (5-block vs. modified 4-block)
  - Wholesale conservation rates
  - Rate design (above/below COS)
- Residential Advocate
  - Modified base/extra capacity method
- Industrial Advocate
  - I/I allocations

Additional "What If" Scenarios?

Public Involvement Committee Workshop
March 31, 2008

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Next Steps

- Written comments due 4/7 (to Mike Castillo)
- Next PIC Workshop (4/21)

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Public Comment

Public Involvement Committee Workshop
March 31, 2008

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Cost-of-Service Rate Study 2007-08

Public Involvement Committee Workshop 10: Review of Options

Austin Water Utility

July 22, 2008

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Tonight's Agenda

1. Welcome
2. Decisions by Executive Team
3. Activities since last meeting
4. Review of Water options
5. Review of Wastewater options
6. Next steps
7. Public comments

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Decisions by Executive Team

Public Involvement Committee Workshop
July 22, 2008

Executive Team Decisions Since Last Meeting

- 5-block rate structure for residential
- Outside-city retail classes eliminated
- No separate irrigation class
- April 2009 implementation

Activities Since Last Meeting

Water Model

- Variable month implementation
- Excess-use rate design

Wastewater Model

- Re-constructed from water model to be consistent
- Updated cost allocations
- Developed extra-strength surcharge calculations

Other Activities

- Validated inputs
- Conducted staff training
- Developed "what-if" options

Water and Wastewater Options

Public Involvement Committee Workshop
July 22, 2008

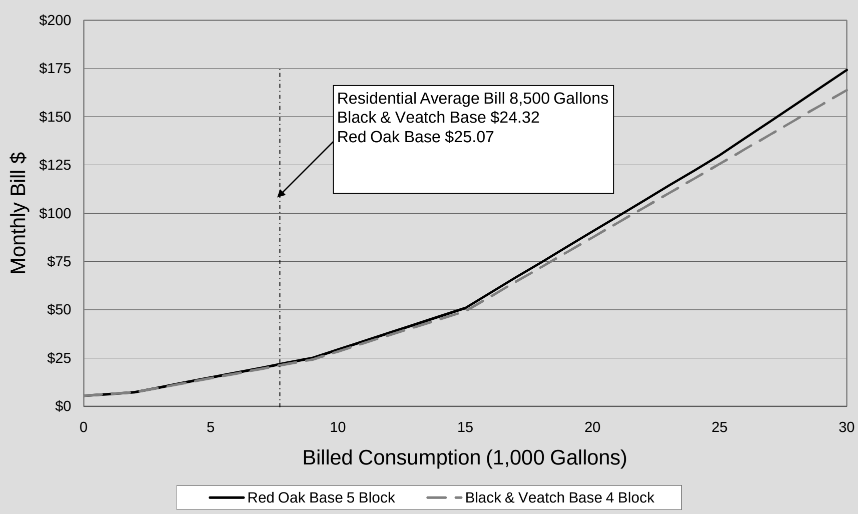
Water Options to be Reviewed

Black and Veatch	• Current approach
Option 1	• Red Oak Base
Option 2	• Seasonal rates for wholesale customers
Option 3	• Recover fire protection through fixed charges
Option 4	• All classes at cost of service
Option 5	• Residential Advocate Hybrid allocation approach

Option 1: Red Oak Base

- 5-block rate structure for residential
- Large-volume customers disaggregated
- 10% above cost for commercial and large-volume customers
- Low income waiver of minimum charge
- Base/extra-capacity allocation method

Residential Water Bills—Option 1



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Option 2

Seasonal Rate Design for Wholesale Customer

- 10% differential
- No impact on cost of service

Other classes remain the same

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Option 3

Fire protection in minimum charges

- Minimum charges vary by meter size

Option 4

All classes at cost of service

- Eliminates 10% subsidy from commercial and large volume customers

Option 5

Residential Advocate Hybrid Allocation

- Cost allocated using base/extra-capacity
- Customer responsibility allocated based on commodity/demand method
- Mutes the impact of peaking

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Water Summaries

Revenues from Rates	• Compares revenues by option • Compares to B&V
Cost of Service	• Allocated costs by class • Ignores subsidies
Rates	• Presents blocks and seasons • Selected fixed monthly charges

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Wastewater Options to be Reviewed

Black and Veatch	• Current approach
Option 1	• Red Oak Base • Includes I&I as a system cost
Option 2	• I&I allocated based on 50% customer and 50% flow
Option 3	• All classes at cost of service

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Option 1: Red Oak Base

- Large-volume customers disaggregated
- I&I allocated as a system-wide cost based on flow
- 10% above cost for commercial and large-volume customers; 2.8% above cost for multifamily
- Low income waiver of minimum charge
- Hybrid allocation method (O&M based on function; capital costs based on design)

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Option 2

Alternative I&I Allocation

- 50% customer
- 50% contributed flow

Option 3

All classes at cost of service

- Eliminates subsidies:
  - Commercial and large-volume customers currently 10%
  - Multifamily currently 2.8%

Wastewater Summaries

Revenues from Rates
- Compares revenues by option
- Compares to B&V

Cost of Service
- Allocated costs by class
- Ignores subsidies

Rates
- Presents blocks and seasons
- Selected fixed monthly charges

Next Steps

- PIC Meeting #10: Review "what-if" options and model printouts
- PIC member review of options and provide comments – Due August 12th
- Executive Team review of PIC member comments and decisions on remaining issues – 2 weeks (depending on comments)
- Update models based on FY08-09 Approved Budget – 2 weeks
- PIC Meeting (to review "final" Executive Team decisions and "final" model) – Late September or Early October

Next Steps (Continued)

- Submission of final comments by PIC members – 3-4 weeks
- COS Presentation to Water and Wastewater Commission – November or December meeting
- COS Presentation to Citizen's Water Conservation Implementation Task Force – November or December meeting
- COS Presentation and adoption by the City Council – January or early February
- Implementation of rates based on new COS methodology – April 1, 2009

Public Comment

Public Involvement Committee Workshop
July 22, 2008

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Cost-of-Service Rate Study 2007-08

Public Involvement Committee Workshop 11: Selected Methodologies

Austin Water Utility

October 9, 2008

Tonight's Agenda

1. Welcome
2. Low-income waiver program update
3. Executive Team decisions
4. Review model results
5. Next steps
6. Public comments
7. Closing remarks

Executive Team Decisions

Water
- Water cost allocation approach
- Recovery of fire protection costs
- Allocation of general fund transfers
- Allocation of treatment plant maintenance costs

Wastewater
- Allocation of costs for I/I
- Large volume wastewater strengths

Rate Design
- Definition of large-volume customer
- Conservation rates for wholesale customers
- Residential subsidies

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Water Cost Allocation Approach

Options
- **Base/Extra Capacity**
- Commodity/Demand
- Rubottom Hybrid

Basis for Decision
- Consistent with industry standards
- Promotes conservation during peak periods

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Recovery of Fire Protection Costs

Options

- Recovered indirectly
- Fixed charge based on property value or fire customer class
- **Fixed charge based on meter size**

Basis for Decision

- More equitable allocation of public fire costs
- Increase revenue stability

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Allocation of General Fund Transfers

Options

- **Revenue-based**
- Capital investment-based

Basis for Decision

- Consistent with how the amount of the transfers are determined

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Allocation of Treatment Plant Maintenance Costs

Options

- **Base cost only**
- Base and maximum-day costs

Basis for Decision

- Aligns maintenance costs with usage

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Allocation of Costs for I/I

Options

- **Contributed volume**
- Number of connections or land area
- Combined connections and volume

Basis of Decision

- Recognizes that I/I is a system cost
  - Individual customers cannot control I/I
  - I/I consumes flow-related capacity

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Large-Volume Wastewater Strengths

Options

- Annual sampling
- **3-Year Average**

Basis for Decision

- Reduce volatility in charges while maintaining equity

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Definition of Large-Volume Customer

Options

- **85 MG/Year**
- 50 MG/Year
- 100 MG/Year

Basis for Decision

- Consistent with a natural break in the consumption patterns for AWU's customers

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Conservation Rates for Wholesale Customers

Options

- **Uniform Rates**
- Seasonal Rates
- Excess-Use Rates

Basis for Decision

- Wholesale customers have individual rates that already provide conservation incentives
- Other options increase revenue volatility

Residential Subsidies

Options

- Subsidy for residential customers
- **Transition to cost of service**
- Immediate elimination of subsidy

Basis for Decision

- Achieves cost of service while reducing rate shock

Summary of Executive Team Decisions: Water Options

Option	Status Quo	Proposed
Water cost allocation approach	Base/Extra	Base/Extra
Recovery of fire protection costs	Indirect	Fixed Charge
Allocation of general fund transfers	Revenue	Revenue
Allocation of treatment plant maintenance costs	Base	Base

Summary of Executive Team Decisions: Wastewater Options

Option	Status Quo	Proposed
Allocation of costs for I/I	50% Customer 50% Flow	System Cost
Large volume wastewater strengths	Prior Year Sample	3-Year Average

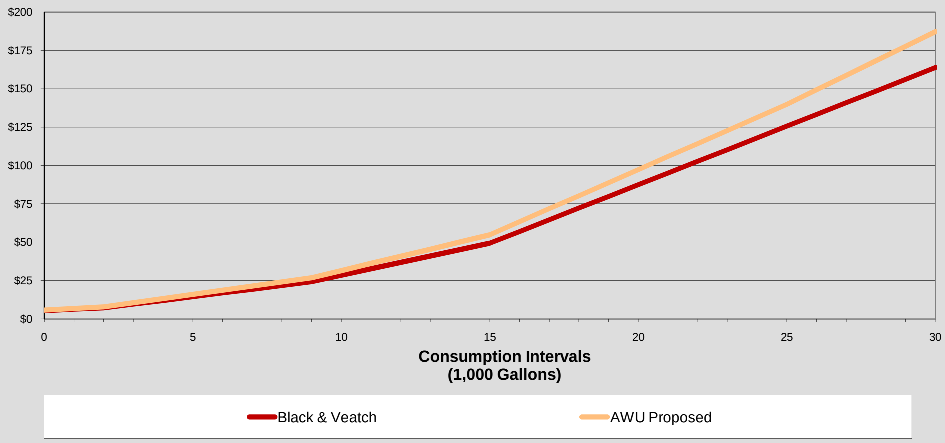
Summary of Executive Team Decisions: Rate Design Options

Option	Status Quo	Proposed
Definition of large-volume customer	85 MG/Yr	85 MG/Yr
Conservation rates for wholesale customers	Uniform	Uniform
Residential subsidies	Subsidized	Transition to COS

Review Model Results

Austin Water Utility
October 9, 2008

Comparison of Residential Bills by Consumption Levels



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Next Steps

- PIC comments to Mike Castillo by 10/31
- Update rates for FY08-09
- Final Reports from Red Oak and the Residential Rate Advocate
- Continue excess-use rate design
- Present study results to:
  - City Manager
  - Boards and Commissions
- Public hearing on proposed rate changes
- City Council briefing and action

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Public Comments

Austin Water Utility
October 9, 2008

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Closing Remarks

Austin Water Utility
October 9, 2008

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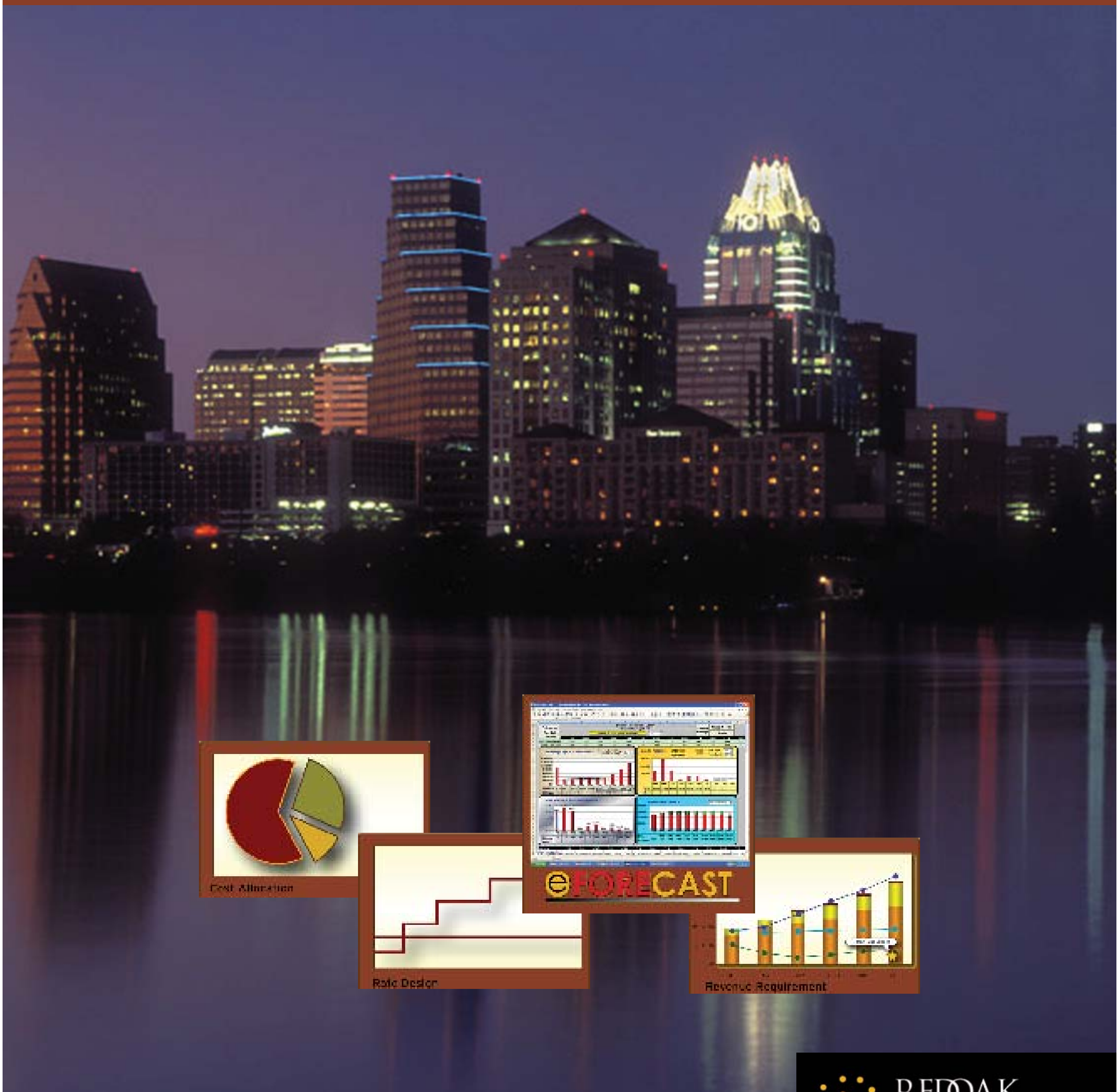

August 2009
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