Parallel Metering & Sub-Metering
Different Customers

- Residential
  - Block Rate Structure

- Community Garden
  - Commercial Rate with Summer Surcharge
Metering Installation Types
(for irrigation using potable water)

- **BM**
- **IM**

House/Business  Irrigation

**Standard**  **Parallel**  **Sub**
Standard Home or Business

- Billing Meter @ ROW/curb
- Irrigation connection near home/business (may be a long distance away from street)
- Wastewater Fees based on Winter Water use (December, January, & February)
- Already used/available to Tucson Water Customers
- Separate meters located at curb/street
- Separate billing for each meter
- Customer Saving Wastewater Fees, but gaining monthly water meter costs
• Some Pima County Wastewater Customers already use their own self-reporting irrigation sub-meters (customer reports use directly to County Wastewater and meter does not need to be adjacent to the curb)

• Metro Water has residential provisions
• Must be within 5 feet of Billing Meter, both need to be adjacent to the curb
• Minimal Customer Use (<20)

• Not available at Tucson Water
• Billing System needs set up for single bill for two meters.
• If instituted, Meter will need to be adjacent to the curb.
• Customer Savings would be in wastewater charges. Extra charges will be incurred for the additional meter.
• Only high volume customers who use significant amount of irrigation water in the winter could realize savings.
Irrigation Meter installation costs do not include costs incurred by customer to install a Backflow Preventor, or to run piping from the meter to the irrigation system, or the Cost of installation of an irrigation system on customer property.
Basis of Monthly Wastewater Charges
(when there is a single/standard billing meter)

- Dec/Jan/Feb = Wastewater Use Determination
- Additional Water Used from March to November is assumed to be irrigation use

Only includes monthly cost of service,
Does not include costs related to initial meter and irrigation system installation
Monthly Water Billing Consideration

Parallel vs Sub-Metering

Each Meter includes:
- Monthly Service Charge
- CAP Fee
- Conservation Charge
- Usage Charges
  - Commercial
    - = 2.35$/ccf
  - Residential Block
    - 1-10 ccf = 1.26$
    - 11-15 ccf = 2.45$
    - 21-35 ccf = 6.45$
    - 36+ ccf = 10.45

Parallel Meters
  - Irrigation Meter Use
  - w/o Wastewater

Sub-Metering
  - Main Billing Meter Use
  - w/Wastewater

Irrigation Use

Wastewater Charges

Main Billing Meter Use

Graphs showing monthly water usage and billing considerations.
What Costs need to be offset to Justify a Parallel Irrigation Meter to Save Wastewater Fees?

(commercial customer)

- **Standard Meter**
  - Installation Cost of 1 Meter
  - Monthly Fees
    - Monthly Service Charge for one Meter
    - CAP Fee
    - Conservation Charge
    - Usage Charges

- **Billing Meter + Parallel Irrigation Meter**
  - Installation cost of 2 Meters
  - Monthly Fees
    - Monthly Service Charge for 2 Meters
    - CAP Fee
    - Conservation Charge
    - Usage Charges
How much irrigation water use to justify a parallel meter? It’s Site Specific!

Water Charges to be offset by Wastewater Cost = Installation cost & Monthly Service Fee

<table>
<thead>
<tr>
<th>Example: 5/8” meter, new service, pavement</th>
<th>Installation Cost</th>
<th>Monthly Cost for Payback Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install Meter</td>
<td>$2,414</td>
<td></td>
</tr>
<tr>
<td>System Equity Fee</td>
<td>$1,311</td>
<td></td>
</tr>
<tr>
<td>CAP Fee</td>
<td>$ 200</td>
<td></td>
</tr>
<tr>
<td>Backflow Permit</td>
<td>$     82</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$4,007</strong></td>
<td><strong>$111.31</strong></td>
</tr>
<tr>
<td>Monthly Service Charge</td>
<td>$   8.27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$   8.27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$   8.27</td>
<td></td>
</tr>
</tbody>
</table>

**Total Monthly Offset Needed**

<table>
<thead>
<tr>
<th></th>
<th>3 yr</th>
<th>5 yr</th>
<th>7 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>$119.58</td>
<td>$75.05</td>
<td>$55.97</td>
<td></td>
</tr>
</tbody>
</table>

Wastewater cost is $3.523/ccf (July 2013). Approximate Monthly CCF (of irrigation use) for payback is:

<table>
<thead>
<tr>
<th></th>
<th>34 ccf</th>
<th>22 ccf</th>
<th>16 ccf</th>
</tr>
</thead>
</table>

Other Customer irrigation system install costs not included. Rate Changes, Inflation & Taxes not included. Average Wastewater Customer pays for 8 ccf/month of wastewater charges.
How to ensure Parallel or Sub-Meter is strictly used for Irrigation?

- **Tucson Water responsibility stops at the Meter**, and does not police water use within customer property.

- After the irrigation meter is installed customer can easily connect the irrigation line to other uses besides irrigation, such as:
  - direct connection to the house or business (TW recently identified a bathroom connected to the irrigation system of a business)
  - cross connection with the main potable line (with resultant backflow concern)
Options for Public Protection and ensuring irrigation meter is used properly

- Yearly cross connection testing (added cost)
- Require backflow on both the household use meter and the irrigation meter (increased cost)
- Increased Backflow regulatory requirements (which would necessitate more backflow personnel at Tucson Water and higher costs)
Questions?
Urban Agriculture
A Typical Community Garden
What is the definition of Urban Agriculture in Tucson?

- **Plan Tucson:**
  - **AG1** Reduce barriers to food production and distribution at home and in community settings.
  - **AG2** Adopt zoning and land use codes that promote and facilitate the equitable growth and distribution of locally produced food.
  - **AG3** Promote an equitable food system that is environmentally and economically sustainable
Typical Community Gardens

- Customer plots
- Users pay a fee
Community Gardens in Tucson
(Examples)

- Dunbar
- St Marks
- Benedictine Sisters
Dunbar

- Irrigation Meter Only
St. Marks

- No Separate Irrigation Meter
Benedictine Sisters

- No Separate Irrigation Meter
- Consistent Yearly Water Use
Typical ½ acre Community Garden
Community Garden w/Potable Water

Hose Bibb (typ)

Customer

Tucson Water

BFP

M
Community Garden w/Reclaimed Water

Installation Assumes no PRV or booster pumps are required (reclaimed pressures vary widely)

Quick Disconnect Coupling (typ)
What is the Meter Size for this Community Garden?

- 15 Hose Bibbs @ 2.5 Fixture Units/Hose Bibb = 37.5 Fixture Units
- 1” Meter
Typical Winter* Monthly Bill
assuming a 1-inch meter, commercial rate for potable, 1,500 gal use/100 sf (Merrill Eisenberg) and 5,840 sf usable garden area

<table>
<thead>
<tr>
<th></th>
<th>Potable Meter</th>
<th>Reclaimed Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Charge</td>
<td>$16.23</td>
<td>$12.21</td>
</tr>
<tr>
<td>Water Use</td>
<td>$2.25/ccf</td>
<td>$1.83/ccf</td>
</tr>
<tr>
<td>CAP Charge</td>
<td>$0.36/ccf</td>
<td>$0</td>
</tr>
<tr>
<td>Conservation Fee</td>
<td>$0.07/ccf</td>
<td>$0</td>
</tr>
<tr>
<td>Monthly Cost</td>
<td>$329.79</td>
<td>$226.32</td>
</tr>
</tbody>
</table>

1,500 gal/mo(5,840sf/100sf) = 87,600 gal/mo = 117 ccf

* Summer Charges for Potable Water may vary due to Customer use. 9.1% Taxes not shown
### Typical Meter Installation Cost

Assuming a 1-inch meter, no existing service line, pavement replacement required, existing distribution main in adjacent street.

<table>
<thead>
<tr>
<th></th>
<th>Potable Meter</th>
<th>Reclaimed Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter (w/pavement)</td>
<td>$2,504.00</td>
<td>$2,504.00</td>
</tr>
<tr>
<td>System Equity Fee</td>
<td>$3,278.00</td>
<td>$0</td>
</tr>
<tr>
<td>CAP Resource Fee</td>
<td>$500.00</td>
<td>$0</td>
</tr>
<tr>
<td>Backflow Permit</td>
<td>$82.00</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$6,364.00</strong></td>
<td><strong>$2,504.00</strong></td>
</tr>
</tbody>
</table>

Costs do not include any piping or appurtenances beyond the billing meter.
What is included in the Meter Installation Costs?

- Meter Installation
- Backflow Permit
- System Equity Fee
- CAP Resource Fee
### Meter Installation Cost Example

#### Materials
- [ ] Materials
- [ ] Labor
- [ ] Equipment

---

#### Table

<table>
<thead>
<tr>
<th>METER SIZE</th>
<th>TUCSON WATER</th>
<th>INSTALLATION</th>
<th>equipment</th>
<th>TOTAL COST</th>
<th>EXISTING RATE</th>
<th>PROPOSED RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot;</td>
<td>$108.99</td>
<td>$301.06</td>
<td>$804.30</td>
<td>$1,308.35</td>
<td>$2,335.68</td>
<td>$2,415.60</td>
</tr>
<tr>
<td>1&quot;</td>
<td>$145.50</td>
<td>$301.06</td>
<td>$804.30</td>
<td>$1,308.35</td>
<td>$2,415.60</td>
<td>$2,415.60</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>$212.57</td>
<td>$301.06</td>
<td>$804.30</td>
<td>$1,308.35</td>
<td>$2,415.60</td>
<td>$2,415.60</td>
</tr>
<tr>
<td>2&quot;</td>
<td>$300.00</td>
<td>$301.06</td>
<td>$804.30</td>
<td>$1,308.35</td>
<td>$2,415.60</td>
<td>$2,415.60</td>
</tr>
</tbody>
</table>

**NOTES:**

This proposal for automatic meter reading devices to be installed with new meter installations. Instead of visually reading water 6%./meters, these meters utilize radio technology to transmit water readings. The proposal has made the implementation of automatic meter reading financially feasible for the utility and will help provide the need for additional meter reading staff.

The standard proposal for a 3/4" meter installation is based on a plastic meter box. For 3/4" installations in pavement or concrete a larger, average less is assumed and the estimator shall be charged a differential between the standard and upgraded box. In accordance with the Tucson Water Design Standart, 3/4" meter installations require a 1" service line (drum diameter) reduced to a 1/2" connection at the meter. In order to use the 3/4" meter on the one inch service line a 1/2" to 1/4" bushing is required. Material costs for the 1/2" installation except for the meter, meter box and bushing are based on the "Total Material and Equipment" line.

**Meter Placement** is priced at $9.75 per square foot and $100.00 per test location to be replaced totaling $865.00.

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>3/4&quot;</th>
<th>5/8&quot;</th>
<th>1&quot;</th>
<th>1-1/2&quot;</th>
<th>2&quot;</th>
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</thead>
<tbody>
<tr>
<td>Joints</td>
<td>$24.41</td>
<td>$36.24</td>
<td>$36.55</td>
<td>$36.55</td>
<td>$36.55</td>
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<tr>
<td>Conduit</td>
<td>$4.43</td>
<td>$4.43</td>
<td>$4.43</td>
<td>$4.43</td>
<td>$4.43</td>
</tr>
<tr>
<td>3&quot; copper</td>
<td>$2.17</td>
<td>$2.17</td>
<td>$2.17</td>
<td>$2.17</td>
<td>$2.17</td>
</tr>
<tr>
<td>Bracing</td>
<td>$1.31</td>
<td>$1.31</td>
<td>$1.31</td>
<td>$1.31</td>
<td>$1.31</td>
</tr>
<tr>
<td>Meter Box</td>
<td>$24.45</td>
<td>$36.24</td>
<td>$36.55</td>
<td>$36.55</td>
<td>$36.55</td>
</tr>
<tr>
<td>Bell Valve</td>
<td>$7.25</td>
<td>$7.25</td>
<td>$7.25</td>
<td>$7.25</td>
<td>$7.25</td>
</tr>
<tr>
<td>Anchor</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
</tr>
<tr>
<td>Coupling</td>
<td>$5.99</td>
<td>$5.99</td>
<td>$5.99</td>
<td>$5.99</td>
<td>$5.99</td>
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</table>

**CONSTRUCTION & SUPPORT LABOR**

<table>
<thead>
<tr>
<th>Item</th>
<th>3/4&quot;</th>
<th>5/8&quot;</th>
<th>1&quot;</th>
<th>1-1/2&quot;</th>
<th>2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle Service One Hour</td>
<td>$3.97</td>
<td>$5.99</td>
<td>$5.99</td>
<td>$5.99</td>
<td>$5.99</td>
</tr>
<tr>
<td>Idle Service One Day</td>
<td>$32.25</td>
<td>$32.25</td>
<td>$32.25</td>
<td>$32.25</td>
<td>$32.25</td>
</tr>
<tr>
<td>Utility Service Water/T &quot;Utilities&quot;</td>
<td>$32.25</td>
<td>$32.25</td>
<td>$32.25</td>
<td>$32.25</td>
<td>$32.25</td>
</tr>
<tr>
<td>Equipment/Other Service</td>
<td>$3.97</td>
<td>$5.99</td>
<td>$5.99</td>
<td>$5.99</td>
<td>$5.99</td>
</tr>
<tr>
<td>Labor/Relief/ID Card</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
<td>$2.50</td>
</tr>
</tbody>
</table>

**Labor Costs/Materials/Vendor (101%)**

<table>
<thead>
<tr>
<th>3/4&quot;</th>
<th>5/8&quot;</th>
<th>1&quot;</th>
<th>1-1/2&quot;</th>
<th>2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>$37.52</td>
<td>$57.72</td>
<td>$57.72</td>
<td>$57.72</td>
<td>$57.72</td>
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</table>

**TOTAL COST**

<table>
<thead>
<tr>
<th>3/4&quot;</th>
<th>5/8&quot;</th>
<th>1&quot;</th>
<th>1-1/2&quot;</th>
<th>2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>$38.75</td>
<td>$58.95</td>
<td>$58.95</td>
<td>$58.95</td>
<td>$58.95</td>
</tr>
</tbody>
</table>
Backflow Permit

- Labor
- Equipment

<table>
<thead>
<tr>
<th>TUCSON WATER</th>
<th>LABOR</th>
<th>EQUIPMENT</th>
<th>TOTAL COST</th>
<th>EXISTING RATE</th>
<th>TOTAL COST MINUS EXISTING RATE</th>
<th>PROPOSED RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$67.21</td>
<td>$9.00</td>
<td>$76.31</td>
<td>$82.00</td>
<td>$(5.69)</td>
<td>$76.31</td>
</tr>
</tbody>
</table>

**NOTES:**
Tucson Water determines when a backflow prevention assembly is required for a connection to the water system. Prior to the installation of any backflow prevention assembly, the customer is required to obtain a permit from Tucson Water. A separate permit must be obtained for each required backflow prevention assembly installed, including replacement. This fee recovers the cost of issuing the permit and respecting the installation of the assembly.

**Tucson Water Labor Detail:**

<table>
<thead>
<tr>
<th>SUPPORT &amp; INSPECTION</th>
<th>HRS</th>
<th>WAGE</th>
<th>BENEFITS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Assistant</td>
<td>0.25</td>
<td>$19.00</td>
<td></td>
<td>$7.01</td>
</tr>
<tr>
<td>Backflow Prevention Inspector</td>
<td>1.00</td>
<td>$22.00</td>
<td></td>
<td>$23.47</td>
</tr>
<tr>
<td>Labor Cost/Departmental Overhead (100%)</td>
<td>1.25</td>
<td>$17.83</td>
<td></td>
<td>$22.28</td>
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</table>

**LABOR COST:**

<table>
<thead>
<tr>
<th></th>
<th>HRS</th>
<th>RATE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment</td>
<td>1.00</td>
<td>$9.00</td>
<td>$9.00</td>
</tr>
</tbody>
</table>

**P. 26**
System Equity Fee

- The system equity fee is a one-time charge assessed new connections to the central potable water system to recover costs associated with previous investments in capacity currently available to meet the needs of growth.

- The system equity fee is designed to be consistent with: The City’s financial and growth management policies and Industry standard methods for calculating capacity reimbursement fees for new development, established by the American Water Works Association (AWWA)
CAP Resource Fee

• Adopted in FY 2007, provides for the recovery of an equitable portion of the costs incurred, or estimated to be incurred, for acquisition of CAP water rights from future connections to the central potable system.

• Revenues collected from the CWRF are restricted to resource acquisition and/or capital improvement costs related to delivery/treatment of that new water resource. The funds can be used as the water resources are purchased or as the related capital projects are constructed, or for reimbursement of previous outlays for such purposes.
Are there Meter installation fees that CWAC would recommend to Mayor and Council to waive for Urban Agriculture?

- If So
  - Further Staff Analysis may be needed for specific items
  - Attorney Consultation
  - Bond Council
  - Recommendations need to be referred to Finance Sub-Committee for Rate Adjustment

Any fee that is waived will need to be borne by other customers to subsidize Urban Agriculture
TUSD Schools
(with reclaimed water)
that are closing

• Townsend, Carson & Brichta
Questions?