

Questions and Comments on Submetering:

1. Observations about submetering and MF properties built since 2003:

- Approximately half of large apartment complexes are submetering and about half are allocating.
- Almost all new condos are paying for master-metered water through HOA fees.
- Condos have the lowest per capita water use, apartments have the highest, SF is in the middle.
- There are technical/design issues that make multi-story MF properties (mid- and high-rise condos) more difficult to submeter and/or meter individually.
- Unlike in apartments, irrigation-meter water in condos would have to be divided evenly among units since there is no “management” to charge for common-use water. In either a submetered or individually metered scenario, this could result in residents and business owners receiving two water bills: one for actual water use in the unit, another for apportioned irrigation and common-use water.
- We know there is a price-elasticity of demand, but so far we don’t have any data on income-elasticity of demand. We can assume, however, that demand is less elastic at higher income levels. We also know that condo owners will tend to have higher incomes than apartment dwellers.

These observations would seem to indicate that for condos, the question of submetering and individual metering is highly complex. Do you have ways to resolve these issues? If not, do you think it might make more sense to target submetering to large apartment complexes?

Austin Energy directly meters all living units whether they are condos or apartments. Condos are not structurally different from apartments. Both exist in the current market in low, mid, and high rise structures. Both must meet the same plumbing code requirements, including the requirement that they be plumbed to allow for the installation of submeters. Most of the technical issues that arise with condos also apply to apartments. Under submetering, the only difference between the two is how the water bill for common areas is paid. In apartments, the owner or management company pays the bill for common areas such as irrigation and swimming pools. For condos, the home owners association would pay the bill for common areas. This is equitable since each resident benefits from the common area water uses and pays for a portion of the common bill through homeowner fees, as they would for fees associated with cleaning the parking garage or providing exterior lighting. Each resident is then responsible for paying for their own water usage, over which they have discretion. This is identical to submetering in apartments – in both cases the approach sends the price signal for using water to those who control its use. There is no structural or procedural reason to treat condos differently from apartments under submetering rules.

2. You stated at the previous meeting that you thought commercial units at mixed-use properties were required to be individually metered or submetered. Please cite this requirement in code or technical manuals. If this is in fact a requirement, please have the appropriate regulatory agent explain why this is not happening consistently.

As with apartments, mixed use properties (such as retail on the ground floor and condos on the higher floors) are required to install plumbing for submetering for both the retail space and for the condo units. This plumbing allows the owner to accurately bill for water use. It is required in Chapter 6 Section 610.8.1 of the plumbing code, as follows:

All multi-family housing units, including, but not limited to, apartments, townhouses, condominiums, manufactured home rental communities, and multiple use facilities, shall be plumbed to either accommodate individual metering of each unit by the water utility, or have single cold water stub outs supplying all fixtures in each dwelling unit supplied by the master meter in order to make possible the installation of private meters.

3. If commercial units in mixed-use properties were (are) required to submeter but residential units were not, how would commercial units pay for their share of common-use water such as irrigation? Two bills?

All units, both commercial and residential, in mixed use properties are required to install plumbing that would allow for them to be submetered. Common area uses such as irrigation would be paid by the property owner.

4. What are submetering/billing companies charging for services currently? Your figure of \$3 to \$5 is not reflective of the info I was getting back when I informally surveyed the post-2003 MF properties. I was hearing more like \$5 to \$10. Please document and provide reliable, up-to-date costs for meters and billing services. ...Also, please compare these costs, which would be passed on to residents, against the water bill savings they would see from anticipated conservation.

Representatives of submetering companies, one national and one local, both indicated that monthly fees run in the \$2 - \$3.50 per unit per month range, depending on the specific services provided. These monthly costs cannot, according to State law, be passed on to tenants and would be paid by the apartment owner. According to City plumbing inspectors, submeters are installed in about half of the multifamily properties built since 2003, when the requirement to have plumbing capable of being submetered was implemented. Costs for meter installation vary, ranging from \$100 - \$125 per meter for new construction, and running up to \$225 for already occupied properties.

5. You stated at the previous meeting that capital recovery fees for individual meters would need to be adjusted so they would be revenue/cost-neutral. Have

you researched the details of whether and how that would work? Are there other charges that would also need to be adjusted?

In order to bill for all water used at an apartment, it would be advisable for the City to continue to install a master meter even if the building requested the City to individually meter each unit. Without a master meter, the City could end up losing water due to leaks between the street and the individual meter on the property. The capital recovery fee would be based on the master meter just as it is currently.

6. What sort of technical issues/impediments arise with regard to installing utility meters? What solutions are available to overcome those impediments?

Keeping a City master meter allows two possible solutions: The individual unit meters could be in a vault in a separate room or outside the building; or in each individual unit. In both cases, the water line from the master meter to the City individual meter would be owned by the property owner who would be responsible for maintenance. Both the master meter and the City individual meter would be read monthly. Technology does exist to allow remote reading of the individual in-unit meters, but the City would need to explore this further before making a recommendation. If the master meter registered more water use than the sum of the individual meters, the difference would be billed to the property owner since it would be either water lost due to leaks on the property or an unmetered connection beyond the master meter. This solution has two main problems, billing and maintenance. Reconciling the billing between the individual meter and master meter reads would be done manually. The billing system is not currently configured to manage this task. Individual meters would either have to be in a public right of way or easement for the City to perform maintenance, or the City would have to hire master plumbers to oversee the work, as required by state law. Alternatively, the City would need to have an agreement with the management company to maintain or change out the meters when necessary.

There are few buildings in Austin built today with central boilers. Buildings with central boilers pose a problem in that there would have to be at least two water lines into each unit, one for hot water and one for cold. A solution could be a hybrid allocation system where the cold water is submetered for each apartment. The cold water reading would be used as a proxy for the total amount of water used in the unit, much like the State's hot water metering hybrid allocation system.

Finally, concerns of apartment properties that have affordable housing tenants need to be addressed. Those properties may include utility charges as part of the rent, and there may be issues resulting from separating out water charges.

7. Why are individual metering requirements in New York City limited to properties 3 stories tall or less?

Taller buildings are less likely to have units with their own water heaters, making submetering much more difficult.

8. Does ABIA currently submeter its restaurants and retail tenants?

No, it does not, though submeters were used at the old airport. The ABIA terminal was designed to enable submetering to tenant spaces, but submeters are not currently being used. Water charges are now factored into lease payments.

9. Please provide more information on auto flush toilets.

We have been unable to locate any published studies on the water usage of toilets and urinals with automatic flushing devices. Anecdotally, automatic flushing is definitely a problem, possibly because the devices are not properly adjusted and maintained. We plan to gather more information on this issue since it is estimated that 30 to 40 percent of new commercial toilets are being installed with automatic flush systems. We will make a recommendation at a later meeting.

Questions on Plumbing Code changes:

1. Have you met with representatives of the industries that would be affected by your proposed changes? What has their response been?

We have not had the opportunity to meet with representative of the industries affected. All stakeholder groups that we have been able to identify have been notified of the Task Force meetings. In addition, we attempted to contact the Austin Restaurant Association to ensure that they were aware of the proposals that would affect them, but they have yet to respond.

2. How do you propose to enforce plumbing code changes?

They would be enforced by the plumbing code inspectors at the time of construction.

3. You appear to be recommending that Austin require high efficiency toilets (HETs), toilets that use a maximum of 1.28 gallons per flush and meet the 350g flushing performance standard as per the MaP testing procedures, for all new construction, with a delayed implementation date of 2009. Is this correct?

Yes that is correct; however, 2009 is a tentative date based on current trends in the toilet industry.

4. What if the market and technologies have not matured by then? ...The Water Conservation Program currently offers toilet replacement incentives for ULFTs installed up to 1996 because the early models often had poor performance. Given that the market had been forced to the 1.6 gpf standard 3 years prior by

federal law and toilet performance was still substandard, what reason do we have to believe that the market will be providing an adequate range of products with high performance 2-3 years from now when we don't have market transformation backed by federal law?

When the plumbing code was changed in 1992, toilet manufacturers were slow to respond with toilets that performed well. The 1992 change only addressed flush volume, not performance. The high efficiency toilet (HET) requirement avoids this problem by including a performance standard from the start. Since the advent of reliable third party performance testing in 2003, toilet manufacturers have embraced performance as a means to achieve product differentiation. They are likewise rushing to produce toilets that meet the HET specifications. All major toilet manufacturers that we have spoken with either already have or are working on producing HET toilets. EPA has announced that they plan to finalize their specification for Water Sense HET toilets by early 2007. This will greatly accelerate the product transition to HETs. This year, California considered a bill requiring HETs (without performance standards) for all new homes by 2009. It passed both houses and is sure to be introduced again next year with performance standards. Since California is a huge market, manufacturers will be ready for any date that is set for HETs in California. Once California has a firm date, Texas and the rest of the country are likely to follow.

5. What are the savings numbers for a more comprehensive retrofit, not just toilets, but aerators/showerheads, etc. to reduce indoor use?

The savings numbers in the presentation included retrofit of toilets, showerheads, and aerators.

6. Please provide cost data on wastewater recycling systems.

Cost data on wastewater reuse will be included in the third group of meetings on municipal solutions.

7. On demand hot water systems.

The City of Austin Plumbing Code addresses an aspect of this issue:

Section 501.1 Water Heater Location

"The total developed length of water piping from the outlet of the furthest fixture served by the water piping may not be greater than 70 feet, unless the water heater is installed with a gravity flow design system or a mechanical pump to provide continuous hot water to the fixture or with additional water heaters."

Reportedly, larger home that do not meet the 70 foot requirement are installing recirculating pump systems.

One small study of five homes showed savings of 3600 to 12,000 gallons per year by using recirculating hot water systems. Additional study is needed for an accurate savings figure, but at a minimum we could consider requiring a hot water recirculating system in a home where the hot water heater is more than 40-50 feet from the furthest fixture.

8. Clothes washers installed in laundromats and central laundry rooms in apartment complexes.

Hard mount washing machines are bolted directly to the floor, while soft mount machines are not. There is a trend toward replacing single load machines in laundromats with double and triple load hard mount machines. The Department of Energy (DOE) has set a water factor of 9.5 for the soft mount single load washing machines commonly found in laundromats or apartment central laundry rooms. DOE did not set a standard for any hard mount machines or for double and triple load soft mount machines. Therefore, the City is not preempted from adopting a local standard for these machines. The Energy Star criteria for residential clothes washers will include a water factor of 8.0 starting January 1, 2007. Therefore we would recommend an 8.0 water factor as a good standard for our local requirement.

We recommend:

- a. that all newly installed single, double and triple load hard mount machines and double and triple load soft mount machines be required to have a water factor of no more than 8.0,
- b. that new machines include a sensor that automatically adjusts the amount of water used to the amount of clothes being washed, and
- c. that there be a retrofit requirement so that by 2009 all single and multi load machines with a water factor greater than 9.5 are required to be replaced.

Cooling Towers:

1. As per the last task force meeting, please provide specific details on the feasibility of requiring reverse osmosis (RO) technologies for cooling towers.

RO increases the cycles of concentration resulting in lower water use if the reject water from the RO process can be used for irrigation. Cycles of concentration is a ratio of the concentration of the salts in the blowdown water divided by the concentration of the salts in the makeup water. In properties that do not have landscapes needing irrigation, requiring RO would not be cost effective because there would not be a use for the reject water. For buildings with irrigation needs, we recommend that RO be promoted as a water saving option. We will gather additional input on this option and may amend this recommendation at a later meeting.

2. Please provide recommendations for making sure we achieve the conservation savings that become possible if cooling towers are equipped with

the basic instrumentation you recommend – i.e., how do we make sure operators are employing best practices once they have the instrumentation in place to do so.

This is addressed below.

3. Please provide specific recommendations for requirements for minimum cycles of concentration.

Savings from cooling towers would best be achieved by setting requirements for cycles of concentration and instrumentation. To effectively manage cooling towers and achieve a cycles of concentration requirement, the towers would need to be fitted with makeup and blowdown meters, conductivity controllers, overflow alarms, and drift eliminators. With that equipment in place, cooling towers can achieve five cycles of concentration or better. It is recommended that the minimum cycles requirement be set at 5.0, with higher cycles encouraged. It is also recommended that cooling towers used for air conditioning systems be limited to systems of 100 tons or more. Cooling towers would have to be inspected annually to ensure compliance.

Car Washes:

1. Please reformat your recommendations to account for the suggestions offered by Chris Brown at the previous task force meeting.

Based on Chris Brown's presentation, and on a meeting we had with the Southwest Car Wash Association, we recommend the following for all car washes, both existing and new:

- Limiting conveyor car washes to a maximum of 40 gallons per car,
- Limiting in-bay car washes to a maximum of 55 gallons per car,
- Requiring hand wand nozzles to use no more than 3 gpm,
- Requiring that charity car washes be held on site at existing car wash establishments, to ensure that water is conserved and that the wash water is not put into the storm sewer system,
- Large vehicle (bus or large truck) washes would be limited to 75 gallons per vehicle, and
- Requiring new car washes constructed after 2009 to use a maximum of 40 gallons per car.