



*Water Conservation and  
Economy in New Jersey through  
Sub-Metering of Water in  
Multi-Family Rental Housing.*

New Jersey Apartment Association

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# **Water Conservation and Economy in New Jersey through Sub-Metering of Water in Multi-Family Rental Housing.**

## **Introduction**

The New Jersey Board of Public Utilities (BPU) is examining utility sub-metering in New Jersey rental housing served by regulated utilities under the jurisdiction of the BPU. The BPU staff undertook the examination to assist the Board in determining whether to initiate rule making concerning sub-metering and to shape such a rule should one be proposed for adoption.

BPU Staff conducted four public stakeholders' meetings and at the fourth such meeting, staff reported that it had been directed to work jointly with the Department of Community Affairs to develop a sub-metering rule. The BPU staff indicated that legislation might be required to permit sub-metering. Staff also stated that more data would be sought to demonstrate the water conservation benefits of such a rule. This policy paper on behalf of the New Jersey Apartment Association (NJAA) provides such additional information and perspective on water conservation that can be achieved with a sub-metering rule.

While the BPU's examination addresses all utility services, including gas and electricity as well as potable water, this review by the NJAA is limited to sub-metering of water service in applicable and potentially eligible multi-family residences – that is, in apartment buildings served by regulated water utilities.

There are over 1,000,000 rental units in New Jersey. The NJAA is the largest advocacy organization for the owners and managers of apartments in the state as it represents owners and managers of approximately 150,000 units. The NJAA believes there should be -- and is committed to achieving -- a water sub-metering rule that will be fair and equitable for both residents and owners of multi-family rental housing.

**The primary question should not be whether sub-metering of water should be allowed. Rather, the primary question should be how State Government can help facilitate the installation of sub-metering technologies in multi-family rental housing in order to further conservation of our limited supply of drinking water.**

Economic considerations have weight and should be disclosed in public matters. In that regard the NJAA represents the viewpoint of apartment owners who are convinced that sub-metering will end the waste of billions of gallons of potable water in New Jersey each year. It is in the public interest to conserve water. It is in the economic interest of NJAA members to stop paying for billions of gallons of potable water wasted each year in New Jersey. It is water that is wasted because residents do not have a stake in water economy. Sub-metering -- letting residents see and understand their water use -- would give residents a stake in water conservation they do not have now.

Therefore, because it is a proven means to produce immense reductions in the annual demand on the limited supply of potable water in our state, sub-metering is both good public environmental policy and also good economics in the rental housing industry in New Jersey. Indeed applied to New Jersey the findings of a national study suggest the annual water savings to be achieved by water sub-metering in multi-family rental housing in New Jersey could be billions of gallons of water per year. Such water savings would be enough to meet all the yearly potable water requirements of the combined populations of Newark and Jersey City or to satisfy potable water needs sufficient to meet the current rate of population increase in the state for the next ten years.

## **Overview**

Sub-metering is a means to monitor and account for utility usage in each unit of multiple family buildings. In the alternative -- which is now the case in the majority of multi-unit New Jersey buildings served by regulated water utilities -- water use in a multi-family dwelling is measured by a single master meter that is owned, maintained and monitored by the investor-owned water utility. This single master meter does not distinguish between water use in one apartment or the next, or water use for common areas (e.g. community laundries, landscaping, swimming pools).

Because such master meters do not differentiate between the amounts of water used by one apartment from another, and because residents therefore have no incentive to conserve water and save money by using less water, single building utility meters encourage waste and do nothing to encourage or induce water conservation. This wasteful scenario of unchecked

consumption runs counter to clear, longstanding State public policy that favors water conservation.

A multi-family dwelling can range from a two-unit duplex to a building containing several hundred apartments. Generally, small multiple-dwelling residential buildings have from two to four units that are each metered separately – and directly – by the regulated public utilities serving the location, whether they supply gas, electricity or water. Sub-metering technology, where allowed, is used in larger buildings having more than four units. Sub-meters are not owned, maintained or serviced by utilities. They are installed, maintained and serviced by companies whose business is sub-metering.

In other words, sub-metering, when it occurs, is a conservation measure subcontracted by building owners to sub-metering technology firms.

Sub-metering technology firms are not deemed public utilities. In fact in December 2003 the United States Environmental Protection Agency (EPA) adopted amendments to its policy with regard to the Safe Drinking Water Act to encourage sub-metering by finding that building owners that utilize water sub-metering would no longer be regarded as -- and should not be deemed to be -- public utilities subject to utility regulation. The agency said, “The EPA believes that the addition of a sub-meter should not in any way change the quality of water provided to customers on these properties.”

Furthermore, in its action notice announcing the amended policy the EPA declared:

“Throughout the country, sub-metering of apartment buildings has been found to be an effective but little-used tool to support water conservation. Water conservation is an integral part of watershed protection, particularly in arid and drought stricken areas. In addition to helping reduce the risk of water shortages, water conservation also provides other important benefits. Water conservation helps ensure in-stream flows, thereby providing protection for ecosystems, which can become out of balance when demands stress water supply and wastewater infrastructure making them prone to failure. Further, the use of sub-meters to measure water consumption is a necessary prerequisite to achieving full-cost and conservation pricing.”

The EPA's interest in stating that sub-meterers are not public utilities concerns water quality; in essence the agency concluded that sub-metering the water does not change or threaten the quality of water. The New Jersey BPU has a different public interest. The BPU's interest is to oversee investor owned utilities and the utility commodities they deliver, as well as the infrastructure of the delivery system, to assure a price system that is equitable to consumers and sufficient to maintain the infrastructure in good order while ensuring a fair return on investment. The NJAA believes that just as the EPA has concluded that sub-metering does not make a utility, the New Jersey BPU within the context of its regulatory interest can reach a similar conclusion by recognizing that sub-meters and sub-meterers do not supply potable water and do not set or receive the rates that are established by the BPU and collected by regulated water utilities.

Sub-metering does not interfere in any fashion in the governmental processes of utility regulation or in the business processes of regulated water utilities. In the case of water usage a sub-meter is simply a means to identify, isolate and account for the exact draw down and consumption of water by each resident. The same water that is clean and potable because of federal and state environmental standards, and whose delivery and commodity price is subject to oversight and regulation by the New Jersey BPU.

### **Multi-Family Rental Housing in New Jersey**

New Jersey allows sub-metering in specific circumstances, including condominiums and cooperatives, where individual units are separately owned. Sub-metering is also allowed in New Jersey in publicly owned multiple-family housing. Multi-family rental housing is also sub-metered for water in areas where water is provided by municipally owned water utilities that are exempt from BPU regulations. [Note: New Jersey BPU has jurisdiction over private and investor owned water utility businesses but does not have jurisdiction over municipally owned water systems.]

If New Jersey were to adopt a sub-metering prohibition it would become the only state to currently do so. The only other previous hold-out state regarding sub-metering was Massachusetts, which recently lifted the prohibition.

On December 16, 2004, Massachusetts Governor Mitt Romney signed legislation repealing the Commonwealth's prohibition on sub-metering when he signed Chapter 417 of the Acts of 2004. The Act reads, in part:

“A landlord may cause to be installed by a plumber licensed in the commonwealth, at the expense of such landlord, submetering equipment in the landlord's building to measure the quantity of water provided for the exclusive use of each dwelling unit, provided that such equipment meets the standards of accuracy and testing of the American Water Works Association or a similar accredited association; and provided further, that a submeter is installed for each dwelling unit in the building and for the common areas of the building, so that all water used in a building is measured by both a primary meter and a submeter.”

The new Massachusetts law also enumerates various requirements on the property owner, one of which states that no administrative charges may be levied on the resident, beyond a pro-rated portion of the service charge levied by the water company providing water to the building.

As a result of Massachusetts' action last month, New Jersey is now the only state in the nation to not allow sub-metering of market-rate multi-family rental housing.

Given the noted exceptions for publicly owned apartments, condos/co-op units, and apartments served by municipal water companies, to the knowledge and belief of the NJAA the universe of apartments that fall within the jurisdiction of the BPU for the purpose of sub-metering is in the range of 500,000. Of these, 150,000 are owned and managed by members of the NJAA.

According to the United States Census in 2000 New Jersey had 8,414,350 residents, an increase of 8.6 percent over the 1990 census. In 2003 the Census reported a population estimate of 8,638,396, representing an increase of 2.7 percent over 2000, putting the state on track for a 10-year gain from 2000 to 2010 again likely to exceed 8 percent. With the current rate of increase we can project that New Jersey will need to house more than 9 million people by the end of this decade. More people equates to more demand for potable water. No other state in the Northeast is growing at this pace. New York State, for example, experienced

population growth of 5.5 percent from 1990 to 2000 and estimated growth of only 1.1 percent from 2000 to 2003 while the comparable figures for Pennsylvania are just 3.4 percent and 0.7 percent.

Similarly the Census reported that in 2000 there were 3,310,275 housing units in New Jersey, of which 1,053,172 were rental units. This reflected more than a 7.6 percent increase over 1990 when the state had 3,075,310 housing units. The Census said in that 10-year period the number of rental housing units rose by 7.3 percent.

If New Jersey experiences a similar increase in housing units in the current decade to supply similar population growth, the state will need to accommodate an additional 250,000 housing units by the year 2010. If the number of rental housing units increases during this decade at the same percentage rate as in the 1990s, the state will add over 70,000 apartments to its housing inventory.

Therefore the rate of increase in demand for potable water in New Jersey during the past 10 years or more is virtually certain to continue and to remain at least at the same level this year, next year and the near future.

### **Potable Water Management in New Jersey**

New Jersey has exercised state management of its water supply for well over 100 years. The first State Water Supply Commission was established by statute in 1882 and although it was dissolved a few years later, by 1907 the state had recreated a commission with the same title. In 1945 the Division of Water Policy and Supply was created in the then new State Department of Conservation, the forerunner to today's New Jersey Department of Environmental Protection (DEP). In 1970, with the establishment of DEP, the state created the contemporary Division of Water Resources and in 1982 for the first time the state adopted the New Jersey Statewide Water Supply Master Plan.

The state's emphasis on preserving, safeguarding and maintaining an adequate and healthy public supply of potable water continues down to this day with its latest expression being the 2004 Highlands Water Protection Planning Act. The Act places 400,000 acres of the New Jersey Highlands Region in the north central and northwest regions of the state under stringent development controls for the primary public purpose of safeguarding the immense

water systems and supplies they contain in their lakes, streams, rivers, recharge areas and reservoirs.

There is a great deal more to the history of potable water management, preservation, and protection in New Jersey, and extensive information about the policies and water supply infrastructure of New Jersey. Suffice it to say that the brief historical summary noted above clearly supports the proposition that water conservation is a key element in New Jersey's water management policy now and in the past. This history also supports the proposition that an option like sub-metering -- that can clearly and significantly conserve water -- deserves consideration and adoption.

### **Potable Water Supply and Use in New Jersey**

The following discussion relies on two sources, "The Encyclopedia New Jersey" (ENJ), 2004 issue published by the Rutgers University Press, and an informational circular entitled "Water Withdrawals in New Jersey, 1990-1999," a publication of the New Jersey Geological Survey (NJGS), a part of the New Jersey Department of Environmental Protection.

In text accompanying a graphic depiction of water resources in the state, the ENJ says: "Ground water is the primary drinking water source of half of the state's population. Most of this water is obtained from individual domestic wells or public water supplied which tap into aquifers." An ENJ article titled "water" observes that average daily per capita potable water use in the state is 150 gallons, which measured against the state's 2000 census count translates into total yearly use of more than 460 billion gallons of water. This figure is consistent with the NJGS circular, which places the amount of water supplied to the public for potable uses (drinking, bathing, cooking and other household needs) at 447 billion gallons per year in the reported period from 1990 to 1999. According to the ENJ, 616 water purveyors deliver potable water to about 85 percent of the New Jersey population. The remaining 15 percent of New Jerseyans get their water from about 400,000 private wells. The ENJ entry reports that just 20 purveyors serve half the people of the state, which, while not addressed by the article, is certain to include all of the regulated investor owned water companies subject to the jurisdiction of the BPU. According to the ENJ 242 municipalities depend on water supplied from outside their boundaries; 73 municipalities rely on a combination of water supplied from



outside as well as internal supplies; 178 municipalities have their own water supplies, and 73 municipalities rely entirely on domestic wells and have no public water system.

The NJGS circular reports that about 40 percent of the potable water supply is from ground water and the rest from surface supplies. It says during the 1990's total annual water withdrawals in the state ranged from a low of 895 billion gallons in 1996 to a high of 1.05 trillion gallons in 1990 and averaged 971 billion gallons. A yearly average of sources during the 1990s were ground water, 245 billion gallons, the Delaware River, 275 billion gallons, other rivers, 421 billion gallons, and reservoirs, 30 billion gallons.

The NJGS circular notes that -- in addition to potable water supply averaging 447 billion gallons per year -- the yearly average of fresh water used for power generation was 351 billion gallons; water for industrial, commercial and mining uses averaged 114 billion gallons per year, and 59 billion gallons per year were absorbed by agriculture.

### **Quantifying Conservation through Sub-metering**

Knowing the facts above, how much water will sub-metering save in New Jersey?

We project three illustrations based on known New Jersey population, housing and water data described above. Also employed is a study completed in June 1999 by Industrial Economics, Incorporated of Cambridge, Mass. for the National Apartment Association (NAA) of Alexandria, Va. and the National Multi-Housing Council (NMHC) and a more recent study sponsored by the EPA and reported during the summer of 2004.

Entitled "Sub-metering, RUBS and Water Conservation," the 1999 NAA/NMHC report examined water consumption patterns and water and wastewater billing for 32 properties in three states (California, Texas and Florida). The properties represented a broad mix of building sizes, ages and managements. It should be noted that the titled word RUBS is an acronym for Ratio Utility Billing Systems, an alternate method of directly assessing residents for utility costs based on factors such as square footage formulas. This paper is solely concerned with direct sub-metering.

The study concluded that residents who pay for their own water use less. The executive summary of the study said, "Water consumption is generally lower in buildings where residents pay for their own water than in buildings where costs are directly recovered through rents. Sub-metered properties, which have the most direct link between consumption

within a single apartment and the monthly bills, used 18-39 percent less water than did in-rent properties.”

A more recent 2004 study entitled the “National Multiple Family Sub-Metering and Allocation Billing Program Study” sponsored jointly by the EPA, 10 municipal water utilities, the National Apartment Association and the National Multi Housing Council, agreed that direct water billing to residents conserves water. The two-year study released in August 2004 said sub-metering could save about 15 percent of water used in apartments or some 8,000 gallons/year/apartment.

In 2000 New Jersey had 8.4 million residents living in 3.3 million housing units, including 1.05 million apartments. For purposes of the three illustrations the assumption is that one-half of the apartments are served by non-BPU regulated water systems or are owned by public entities and in either case would not be subject to a BPU rule that permits water sub-metering. That would mean 525,000 apartments would be subject to sub-metering under a BPU rule. For the further purposes of the illustrations, the assumption is that the owners of one-half of eligible units -- 262,500 apartments -- would install sub-metering systems.

### **Illustration 1**

The NJGS reports approximately 450 billion gallons of potable water use in New Jersey in 1999. For this illustration it is assumed that even though rental housing comprises nearly 33 percent of dwelling units in the state, just 20 percent of total statewide potable water use – about 90 billion gallons -- was in rental units, translating to 22.5 billion gallons of potable water consumed in apartments that would be sub-metered (one half of the total assumed number of apartments subject to sub-metering or one quarter of all apartments in the state).

A reduction of 10 percent in sub-metered apartments thus would save 2.25 billion gallons of water per year. A 15 percent savings would conserve 3.375 billion gallons per year. A 20 percent reduction would save 4.5 billion gallons per year, equal to an annual savings of 1 percent of all statewide use of potable water.

### **Illustration 2**

This illustration applies the finding of the joint EPA/industry study released during August 2004 that sub-metering conserves 15 percent of water used in apartments or 8,000

gallons per year per apartment. Based on the constant of 262,500 apartments this translates to more than 2.1 billion gallons of water conservation per year.

### **Illustration 3**

This illustration assumes the constant of 262,500 sub-metered apartments and use of 100 gallons of water per apartment per day. The result projects the following savings:

- 10 percent = 958 million gallons of water saved per year
- 15 percent = 1.44 billion gallons of water saved per year
- 20 percent = 1.92 billion gallons of water saved per year.

The NJAA believes these illustrations – which clearly demonstrate substantial water conservation – are reasonable and prudent and point clearly to a finding that water sub-metering in New Jersey multi-family rental properties would be an important water conservation measure.

More specific examples are the following illustrations of before and after water usage in buildings that have been sub-metered:

**a. Springfield Valley Apartments, Delaware County, PA**

After separate water meters were installed, a 12-unit property had its water and sewer bill reduced from \$2,195.00 (95-day cycle) to \$308.86 for a quarter just one year later. Much of the savings was realized from one apartment toilet that was flushing constantly and had never been reported by the resident.

**b. Willow Run Apartments, Montgomery County, PA**

This 172-unit property had water sub-meters installed and resulted in an average water conservation amount of 26% for the first four months after the residents began receiving water bills.

**c. Virginia Court, Monmouth County, NJ**

A 52-unit property realized a 20% reduction in water consumption after total point-of-use sub-metering equipment was installed. Conversion cost \$25,000. Actual water use went from 14,661 gallons per quarter to 11,760 gallons per quarter for a saving of about 0.5 million gallons of water each year.

**d. Atlantic Gardens, Atlantic County, NJ**

A 173-unit property realized a 22% reduction in water consumption after total point-of-use sub-metering equipment was installed. Conversion cost \$83,000. Actual water use went from 62,505 gallons/apartment/year to 48,404 gallons/apartment/year for an annual saving of about 2.4 million gallons of water each year.

## **Resident Water Conservation and Resident Protection**

Knowledge is power. Sub-metering puts residents of rental housing in a position to see and understand their own water use. Understanding one's usage is necessary in order to reduce both the amount of water used and the amount they are billed for. This enables residents to directly reduce the cost by reducing the amount used.

When an apartment has a leak in a faucet or toilet though it may be annoying, it is not an economic burden if one is not paying for the water wasted by the leak. As a result the leak may go unreported and un-repaired. A leak can increase the daily water usage significantly. Everyone benefits when repairs are made, including the water supply. Using some basic, common sense rules like turning off the water tap when brushing teeth, taking shorter showers, installing water saving shower heads, chilling tap water in the refrigerator for drinking instead of allowing the tap to run until the water becomes cold and running washing machines and dishwashers only with full loads can produce significant daily water savings. When people know what something costs and have to pay for it they are much more likely to make an effort to do things that lower the cost.

Residents are the key to conservation and they should be protected in any conversion to sub-meters. That is why the Goals for Professional Conduct of the National Sub-metering & Utility Allocation Association directly speak to the needs of residents. The Goals state:

- Methods should be specified to allow residents an opportunity to express and resolve complaints regarding the billing service.
- The residents' utility service shall not be shut off if they do not pay their bill.

- On an annual basis, the billing company shall produce a report showing the level of water conservation that has occurred during the year and since the billing program began at the property.

The NJAA favors introduction of sub-metering of water service by the BPU through a rule that must and will be fair to residents, providing them with a cost benefit that will flow from their own water use and conservation. At the same time, owners must have sufficient incentive to pay the substantial cost of installation of sub-metering equipment.

The NJAA advocates the following Principles for water sub-metering in New Jersey rental housing:

### **Installation**

Owners of existing multi-family housing properties, who choose to install sub-meters, should finance the installation. Water sub-metering technology could be installed at any time during a resident's tenancy. Residents would begin to pay for the water used in their unit upon signing a lease renewal or a new lease.

### **Introductory Period after Installation**

For administrative and informational purposes only, current residents should, for a period of six months, receive a notice from the billing company that calculates water use without charge to educate the resident regarding their water consumption and the cost of this water. After this six-month period ends, all residents would begin to pay directly for their own water consumption. New residents would pay for their own water consumption from the inception of their leases.

### **Administrative Charges**

Administrative charges, reflecting a reasonable return of the cost of billing, comparable to such charges levied by investor-owned utilities on single-family residential customers, would be charged to residents after the initial six-month sub-meter introduction period. New residents and those who renew their leases would pay an administrative charge from the inception of their lease. This charge is partially offset by the lower cost of delivery of the water by the utility to the property owner's bulk account.

### **Accuracy**

Water sub-meters must be accurate to American Society of Mechanical Engineers (ASME) standards that are endorsed by the American National Standards Institute, which governs the manufacture and assures the reliability of sub-meters; and therefore should be subject to testing on the same schedule as meters installed by investor owned utilities in single-family homes.

### **Repairs**

Owners of multi-family properties where sub-metering technologies have been installed should respond to resident requests for repairs to leaks and other water wasting plumbing problems within 72 hours.

### **Universal Application**

To encourage and achieve water conservation in all multi-family rental housing properties across New Jersey's 566 municipalities, water sub-metering should be exempted from local rent control ordinances and applied universally throughout the state.

## **Conclusion**

As a result of the Commonwealth of Massachusetts' action last month, New Jersey is now the only state in the nation with a prohibition on sub-metering of market-rate multi-family rental housing.

On its website at [www.state.nj.us/dep/cleanwater](http://www.state.nj.us/dep/cleanwater), the New Jersey DEP declares:

*“New Jersey faces no single greater challenge than providing a clean, safe and plentiful supply of drinking water for our growing population.”*

Clearly, the State of New Jersey recognizes an overriding public policy interest in water conservation, which is at the heart of the state's most recent major environmental enactment, the Highlands Protection legislation. Additionally, the DEP announced in December of 2004 that a series of office buildings, hotels and housing developments in Parsippany would not be allowed to move forward if the municipal government allowed the

developments to connect to the municipal water system. Instead, DEP required Parsippany to sign a reservoir agreement to purchase 124 million gallons per year, at a cost of \$204,000 annually, from Jersey City to supply additional water to Parsippany residents.

Water sub-metering of multi-family rental housing can save billions of gallons of potable water for New Jersey each year. At a time in our state's history when the population is growing and the number of apartments and apartment dwellers is increasing, any reasonable steps to conserve our natural water resources is appropriate and necessary.

Water sub-metering can and should be achieved in a manner that recognizes and protects the rights and interests of residents and property owners alike.

The New Jersey Apartment Association urges the BPU to proceed to rule making to establish a fair system of water sub-metering in multi-family housing served by regulated water utilities in the state.