NCLC ENERGY & UTILITY UPDATE

Energy Assistance, Customer Service and Other Utility Issues Affecting the Poor

Soaking Tenants: Billing Tenants Directly For Water and Sewer Services

By Olivia Wein and Charlie Harak

The 1970's Redux: The Unbundling of Water and Sewer Bills From Rent

The energy crisis in the 1970s, a time of oil embargoes and growing concern over energy costs and conservation, led to the trend of charging tenants separately for energy as opposed to including the costs in the rent.¹ A similar trend has started to emerge in recent years for water and sewer bills.² This trend to have tenants pay for water and sewer separate from rent is driven by factors similar to those that drove apartment owners to separate energy costs from rent back in the 1970s.

Water and sewer costs are rising for households across the country. Fresh water is getting scarcer as the population grows in some regions of the country. In addition, costs are rising rapidly for repair and replacement of aged and crumbling infrastructure and for complying with water quality regulations.3 While average water bills vary from system to system, water rates have generally increased faster than the Consumer Price Index for the past decade.4 It has been common practice for landlords to include the cost of water and sewer in the tenant's rent.5 However, the increase in water and sewer rates has, within the past few years, led to an increase in the number of landlords looking to pass these costs directly to the tenants.

There are basically four ways a tenant can pay for water and sewer service: to the landlord through the rent; to the landlord or billing agent through a separate bill based on a submeter; to the landlord or billing agent through an allocation formula (also called ratio utility billing system or RUBS), and directly to the water and sewer utility (where the unit is individually metered). This article focuses on two of these methods, the trend toward submetering and RUBS.

In recent years, apartment owner associations and the submetering/RUBS industry have been advocating for the removal of barriers to the use of submetering and RUBS. They often cite to a 1999 study linking water conservation and submetering/RUBS by Industrial Economics, Inc. for the National Apartment Association and the National Multi-Housing Council.⁶ Their analysis indicates that tenants in submetered units used 18-39 percent less water and tenants billed through RUBS used 6-27 percent less than those paying for water in

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their rent.⁷ The apartment and submetering industry argue that submetering and RUBS leads to water conservation and a reduction in the amount of wastewater that needs to be treated.⁸ Submetering companies' websites sell their services to landlords by also arguing that shifting water and sewer costs to tenants will increase the reporting of leaks, leading to a better maintained building; it "insulates the property continued on page 2

¹NCLC, Access to Utility Service, (2nd Ed. & 2003 Supp.), § 5.5.2.2; Leta Herman, "Landlords Go With the Flow to Save Costs By Having Tenants Pay For Water," Washington Post, March 3, 2001; Marc Treitler, "Submetering: What You Don't Know Can Cost You," Units, National Apartment Association, July 1, 2000. ² Seattle City Council News Release, "Council Considers Legislation on Third-Party Water Billing," September 9, 2003; "Getting Involved: Council taking comment on billing of renters," Seattle Post-Intelligencer, September 22, 2003; Erica C. Barnett, "Wrung Dry: Ratepayers Complain About Water Bills," The Stranger.com, May 8 – May 14, 2003; Jason Song, "Asking If Water Meters Matter," Baltimore Sun, August 26, 2002; Matt Williams, "Metered Tenants Cut Back Water Use; New Regulations Allow Landlords to Charge Residents for Water," Greensboro News & Record, July 24, 2002; "Santa Ana-based billing service finds its niche," The Orange County Register, March 21, 2002; Andrew LePage, "California Apartment Group Backs Proposal to Bill Tenants for Water," The Sacramento Bee, April 19, 2001; Chris Helms, "Apartment Water Issue Goes to City Officials," Greensboro News & Record, October 14, 2000.

³ US EPA, *The Clean Water and Drinking Water Infrastructure Gap Analysis*, EPA-816-R-02-020 (2002) pp. 8-9; Marianne Lavelle and Joshua Kurlantzick, "The Coming Water Crisis", U.S. News and World Report, Aug.12, 2002, pp. 22-30.

- * US EPA, Community Water System Survey, Vol. I: Overview, EPA 815-R-97-0018 (1997), p.18.
- ⁵ Marc Treitler, "Submetering: What You Don't Know Can Cost You," Units, National Apartment Association, July 1, 2000.
- ⁶ Doug Koplow and Alexi Lownie, Industrial Economics, Inc., Submetering, RUBS, and Water Conservation (June 1999).
- ⁷ Id. at 7-8.

⁸ Utility Billing Systems Would Create Significant Reductions in Water Use and Wastewater Production, Fact Sheet Regarding Billing the Residents of Rental Housing for Water and Sewer Services, Submitted by Edwin Shanahan, Greater Boston Real Estate Board, To Massachusetts legislature, April 3, 2002 (on file at NCLC). See also, Inovonics Wireless Corporation at www.inovonics.com/submetering /whySubmetering.jsp; Sage Water at www.sagewater-usa.com/sub_reasons.html; Omega Utility Services at www.omega-utilities.com/WhySubmeter.html.

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owner from the uncontrollable rise in water and sewer expense;" it also "increases the property's net operating income;" 9 and it makes the landlord's "base rent more competitive." 10

Whether or not a landlord can submeter or use RUBS to shift the cost of water and sewer directly to the tenant will depend on local and state laws.

Restriction on the Resale of Water

Until very recently, federal environmental policy concerning the submetering of water to tenants under the Safe Drinking Water Act treated certain apartment owners who submeter as public water systems subject to regulations of the Safe Drinking Water Act.11 In August 2003, the US EPA started a proceeding to modify this policy. In interpreting section 1411 of the Safe Drinking Water Act (42 U.S.C. § 300g), US EPA staff and program managers have issued several memoranda stating that an apartment owner with a building having 15 service connections or regularly serving water to at least 25 people (the definition of a public water system under the Safe Drinking Water Act) who bills tenants separately for water is "selling" water and thus independently subject to the Safe Drinking Water Act's regulations.12 In an effort to promote water conservation in apartment buildings, the US EPA proposed revising its policy on submetering apartments so that apartment owners, not otherwise subject to the Safe Drinking Water Act regulations, whose buildings receive water from regulated public water systems and who use submeters to bill tenants directly for water are exempt from full Safe Drinking Water Act requirements.13 However, the property is still considered a Public Water System under the Safe Drinking Water Act, and the US EPA could still use the Act's emergency powers provision to address a public heath risk in the building.14 On December 23, 2003, the US EPA finalized its proposed policy change to the applicability of the Safe Drinking Water Act on submetered properties,15 but declined to expand the exemption to properties using billing allocation systems such as RUBS.¹⁶

Some states have enacted laws that exempt landlords who submeter water to tenants from state water quality regulations. For example, Florida's statute on the regulation of water and wastewater systems exempts from regulation as a utility "landlords providing service to tenants without specific compensation for the service." "Any person who resells water or

wastewater service at a rate or charge which does not exceed the actual purchase price of the water or wastewater" is also exempt.¹⁸ In 1999, the Florida legislature amended the later exemption to eliminate an annual requirement that resellers file with the utility commission a list of charges and rates for water sold and the source and actual price of the water and also the requirement that the meters are subject to testing at a price set by the commission.¹⁹

At the urging of the state's apartment association in 2000, the North Carolina legislature removed apartment owners who submeter from the responsibility for monitoring, analysis and record-keeping under the state's Drinking Water Act, by placing that responsibility on the supplying water system.²⁰ The following year, the state's apartment association pressed the state's legislature to clarify that an apartment complex that receives water from a public water system and allocates those costs among the tenants of the building is exempt from the monitoring, analysis and recordkeeping requirements of the state's Drinking Water Act.²¹

Example of Recent Changes to State Laws to Allow and Encourage Submetering

Another landlord barrier to shifting the water and sewer costs directly to the tenants has been in state laws that prohibit submetering. However, there has been activity to change state and local laws to allow submetering and in some areas, RUBS.²² In 1996 the North Carolina legislature, in response to the state apartment association's efforts, changed the state law to allow submetering of water.23 North Carolina does not allow RUBS.²⁴ The state regulations for the resale of water and sewer service to tenants refers to the water and sewer charge as the "variable rent component".25 The North Carolina legislature added a new subsection to the statute concerning the utility commission's certificate of convenience and necessity that authorized the commission to adopt procedures for the resale of water and sewer in apartments, condos and other similar places.²⁶ The state legislature amended the submetering legislation in 2001 to permit the utility commission to adopt submetering procedures that "allow a lessor, continued on page 3

Omega Utility Services at www.omega-utilities.com/WhySubmeter.html. See also, Sage Water at www.sagewater-usa.com/sub_reasons.html; Inovonics Wireless Corporation at www. inovonics.com/submetering/whySubmetering.jsp.

¹⁰ Sage Water at www.sagewater-usa.com/sub_reasons.html.

[&]quot;US EPA request for comments on the applicability of the Safe Drinking Water Act to Submetered Properties, 68 Fed. Reg. 51777-51780 (Aug. 28, 2003).

¹² 68 Fed. Reg. at 51778 (Aug. 28, 2003).

¹³ Draft US EPA Memorandum, 68 Fed. Reg. at 51778-51779 (Aug. 28, 2003).

¹⁴ Draft US EPA Memorandum, 68 Fed. Reg, at 51779 (Aug. 28, 2003).

^{15 68} Fed. Reg. 74233 - 74255 (Dec. 23, 2003).

^{16 68} Fed. Reg. at 74235 (Dec. 23, 2003).

[&]quot; Fl. St. §367.022(5).

¹⁸ Fl. St. §367.022(8).

^{19 1999} Fla. Sess. Law Serv. Ch. 99-319 (West).

 $^{^{20}}$ 2000 N,C Sess, Laws 2000-172 (H.B. 1218), codified at N.C Gen. St. $\$ 130A-315(d)(2000).

 ²⁰⁰¹ N.C. Sess. Laws 2001-502 (H.B. 1061), codified at N.C. Gen. St. § 130A-315(d)(2001). See Apartment Association of North Carolina Final Legislative Report 2001 p.3. (available at http://www.taa.bz/aanc/legislative_updates/2001-final.pdf).
 Marc Treitler, "Submetering: What You Don't Know Can Cost You," Units, National Apartment Association, July 1, 2000 (article cites recent submetering legislative activity in Arizona, Arkansas, California, Florida, Georgia, Nevada, Oklahoma, Oregon, Tennessee, local activity in Chicago and Cleveland, and commission activity in California, South Carolina, Texas and Washington).

²³ Chris Helms, "Apartment Water Issue Goes to the City," Greensboro News & Record, October 14, 2000.

²⁴ N.C. Admin Code tit. 4, r. 11.R18-16 Variable Rent Component (2003).

²⁵ N.C. Admin Code tit. 4, r. 11.R18-16 Variable Rent Component (2003).

^{* 1996} N.C. Sess. Laws Ch. 753 (S.B. 1183), codified at N.C. Gen. St §62-110(g) (1996).

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pursuant to a written agreement, to allocate the costs for water and sewer on a metered use basis." Further, "the written rental agreement shall specify the monthly rent that shall be the sum of the base rent plus additional rent at a rate that does not exceed the actual purchase price of the water and sewer service to the provider plus a reasonable administrative fee." ²⁷ At the urging of the state's Attorney General's Office and the NC Justice and Community Development Center ²⁸, the legislature also modified the landlord-tenant laws to protect tenants from eviction for failure to pay their water and sewer submetered bills. ³⁰ The landlord is permitted to use the security deposit to recover nonpayment of the water and sewer submetered bills. ³¹

In 2000, Georgia's legislature amended its conservation and natural resources code to authorize owners of rental units to submeter or use an allocation formula to charge tenants directly for water and wastewater.³² The legislation states that the total paid by the tenants cannot exceed that paid by the property owner for the building; that the owner can charge tenants a reasonable fee for establishing, servicing and billing for water; and that the terms of the water and waste-water charges must be disclosed to the tenants prior to any contractual agreement.³³ The legislation had also exempted these property owners from being considered an owner or operator of a public water system.³⁴ Subsequent legislation removed that exemption in 2002.³⁵

The Pitfalls of RUBS

The mantra of those advocating for directly shifting the costs of water and sewer bills onto tenants is that it promotes conservation. While there is some merit to this argument in the case of submetering, it is much harder to accept in the case of RUBS. The allocation formulas can be based on factors such as the number of occupants, the number of bedrooms, square footage, and individually metered hot or cold water usage. These are proxies for water usage and consequently sewer usage and fail to capture the vast range of actual water usage from household to household. For example, an allocation formula based on the number of occupants does not account for how much time tenants actually spend in a unit. A tenant who spends much of her time on the road for work will very likely use less water and sewer service than a tenant who works out of her unit. An allocation based on square footage could unfairly charge a senior

In 2003 a Maryland state delegate introduced a bill to ban RUBS, H.B. 976. The bill was in response to tenants, billed through RUBS, having water bills comparable to single-family homeowners with washing machines, lawns and pools. 38 RUBS has been described as "terribly arbitrary" by Richard Miller of the Maryland Office of People's Counsel. 39 The National Apartment Association argued that H.B. 976 was premature, would lead to higher rents and needed additional research. 40 The legislation failed to pass in 2003, but there may be attempts in Howard and Montgomery Counties to ban RUBS.

A fallback to securing an outright ban on RUBS is to regulate the practice. In October 2003, the Seattle City Council passed an ordinance that prohibits deceptive and fraudulent practices related to third party billing for master metered or other unmetered utility service.41 It defines as a deceptive and fraudulent business practice third party billing failing to comport with the practices set out in the ordinance. These practices include protection of a tenant's personal information, provision of advance written notice of the billing practice to the tenant (including methodology of the billing), posting of current utility bills for the building, limits on the total charges and fees, licensing and registration of the third party billing agent, and a dispute resolution process including filing a complaint with the Office of Hearing Examiner or civil action against the landlord. The ordinance provides for actual damages and a \$100 penalty. Attorneys' fees and a higher penalty are available for deliberate violations.42 The state of Texas also regulates submetering and RUBS. Apartment owners who submeter or use RUBS must adhere to the Texas Commission on Environmental Quality's rules.43 Under the submetering and RUBS rules, landlords in Texas must disclose these billing practices and the methodology in the rental agreement as well as the continued on page 4

living alone in a 2-bedroom unit the same as a young family of four where one parent and two young children remain at home most of the time. Indeed, under RUBS, a household that makes extra efforts to conserve water will not be paying a water bill that reflects those actual savings. The US EPA also expressed its doubts about the conservation claims of RUBS proponents when it declined to include properties billing with RUBS in its recent policy change concerning the applicability of the Safe Drinking Water Act on submetered properties.³⁷

²⁷ 2001 N.C. Sess. Laws 2001-502 (H.B. 1061), codified at N.C. Gen. St. §62-110(g)(2001).

Apartment Association of North Carolina Final Legislative Report 2001 at 3-4.
 2001 N.C. Sess. Laws 2001-502 (H.B. 1061), codified at N.C. Gen. St. §§ 42-3 and 42-26(b).

^{30 2001} N.C. Sess. Laws 2001-502 (H.B. 1061), codified at N.C. Gen. St. § 42-46(d).

^{31 2001} N.C. Sess. Laws 2001-502 (H.B. 1061), codified at N.C. Gen. St. § 42-51,

¹² 2000 Ga. Laws 831, codified at Ga. Code Ann. §12-5-180.1 (2000).

^{33 2000} Ga. Laws 831, codified at Ga. Code Ann. §12-5-180.1 (b)(2000).

^{34 2000} Ga. Laws 831, codified at Ga. Code Ann. §12-5-180.1 (a)(2000),

^{35 2002} Ga. Laws 954, codified at Ga. Code Ann. §12-5-180.1 (a)(2002).

³⁶ See, e.g., 30 Tex. Admin Code § 291.122; Ariz. Rev. St. Ann. § 33-1314.01(F).

³⁷ "Water savings, if any, from RUBS and hot water hybrid billing systems (HWH) are uncertain. At this time, EPA believes that RUBS or other allocation billing systems do not meet the definition of submetering, as used in this policy, and do not encourage water conservation." 68 Fed. Reg. 74235 (Dec. 23, 2003)(emphasis added).

³⁸ Liz Kay, "Foes of Unmetered Billing Rebut the Conservation Argument," Baltimore Sun, March 19, 2003; Jason Song, "Delegates to Debate Unmetered Billing Ban," Baltimore Sun, March 18, 2003.

³⁹ As quoted in Liz Kay, "Foes of Unmetered Billing Rebut the Conservation Argument," Baltimore Sun, March 19, 2003.

^{**} Liz Kay, "Foes of Unmetered Billing Rebut the Conservation Argument," Baltimore Sun, March 19, 2003.

Seattle Council Bill Number 11461, Ordinance Number 121320, passed Nov. 3, 2003, to be codified in Title 7 of the Seattle Municipal Code.

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⁴³ Tex. Water Code §§ 13.501 - 13.506.

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rights of the tenant to contest the bills. 4 Landlords are limited in which fees can be charged to tenants and cannot make a profit from submetering or use of RUBS. 45

The Front-Line Battleground: Massachusetts

Massachusetts currently requires the landlord not only to provide the physical facilities that bring water to rental premises, as do most states, but it also requires the landlord to pay for the supply of water. Massachusetts appears to be the only state that explicitly bans submetering of water. By the mid-1980s, if not earlier, property owners began pushing the notion that tenants could be required to pay for the supply of water if there was a clear agreement between the owner and tenant to that effect. The owners argued that the word "provide" in the relevant section of the state's Sanitary Code only meant that the owner must maintain the plumbing and related facilities that bring water to, e.g., sinks and toilets, not that they had to pay for the actual water delivered through the plumbing system.

The state Department of Public Health issued an informal advisory opinion on May 2, 1988, affirmed and superseded by a formal Advisory Ruling on July 3, 1990, interpreting the state's sanitary code as requiring the landlord to provide and pay for the supply of water in rental premises.⁴⁸ The Department subsequently revised the definition of the word "provide" in Mass. Regs. Code tit. 105, § 410.020 to mean "supply and pay for." The Department's Advisory Ruling noted that:

"Water and sewer services are basic attributes of a dwelling unit essential to the health of the occupants. In the Sanitary Code, the Department has made the determination that public health considerations require the owner to supply every dwelling unit with water and sewer services, just as the owner must supply a kitchen sink [citation omitted] and toiler facilities [citation omitted]."

For several years, Massachusetts property owners have been filing bills to overturn the Department's regulations.⁴⁹ The Massachusetts Law Reform Institute and other low-income advocates oppose these bills on several grounds. There are important and practical reasons for doing so. It is relatively easier for tenants and advocates to find resources to

assist with a single rent bill that includes water costs or to mount a successful defense to an eviction action based on non-payment than to find resources to deal with overdue rent AND water bills or develop legal defenses on these two fronts simultaneously. Further, where tenants are responsible for payment of water bills, the failure to pay those bills and consequent termination of water supply could itself lead to an eviction based on breach of the lease.⁵⁰

The Massachusetts advocates raise a number of objections to submetering of water service, quite apart from the argument the Department of Public Health makes that owners should pay for water in order to protect the public's health. They question whether usage would be accurately metered, especially if a RUBS system is allowed (see "The Pitfalls of RUBS," above). They point out that submetering leads to new administrative costs being imposed on tenants since the owners generally pass the submetering company's costs along to tenants. They note that for low-income tenants, shifting water costs to tenants will likely make units even less affordable. Finally, they emphasize that shifting costs to tenants may actually decrease the existing incentives for owners to fix leaks and install plumbing fixtures and equipment that use less water because the owners will no longer have to pay the bills.⁵¹

Allowing owners to submeter water usage opens a Pandora's box of billing problems. Will each meter measure only usage in each individual apartment? How will tenants be able to know that there is no cross-metering between apartments or no common-area usage (e.g., outdoor water) being added onto bills? How can tenants make sure that the owner collects no more from the tenants than the actual amount the owner pays to the water company? What will stop an unscrupulous owner from overcharging? How will disputes over any of these issues be resolved? Regarding this last point, the "Best Practices Guidelines" supported by the National Submetering and Utility Allocation Association says nothing more than this:

Resident Complaints. Methods shall be specified to express and resolve complaints regarding the billing service.⁵²

This relatively toothless guideline is only voluntary on the part of the owner.

So far, low-income advocates have been successful in stopping these bills. But the property owners keep coming back. NCLC will keep its readers apprised of any new developments. Advocates in other states may be able to us the Massachusetts regulations as a model for obtaining more favorable rules in their own states.

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[₩] *Id.*

⁴⁵ Id.

⁴⁶ Mass. Regs. Code tit. 105, § 410.180 ("The owner shall provide, for the occupant of every dwelling, dwelling unit, and rooming unit, a supply of water sufficient in quantity and pressure to meet the ordinary needs of the occupant"); § 410.020 [Definitions]("Provide means to supply and pay for"). See "Advisory Ruling" of Mass. Department of Public Health Geu. Counsel Donna Levin, July 3, 1990 (interpreting the meaning of § 410.180, prior to the adoption of the clarifying definition of "provide" in § 410.120)(on file at NCLC).

⁴⁷ See fifty-state summary prepared by the National Submetering & Utility Allocation Association, April 2, 2002 (on file at NCLC). (NSUAA is located at 1866 Sheridan Rd., Suite 210, Highland Park, IL 60035). Note, however, that Massachusetts does allow for the "operation . . . of an energy monitoring system installed prior to July 1, 1997, whereby the cost of heat or air couditioning is allocated or charged . . . based upon measurements made by a computerized monitoring system." 1997 Mass. Acts ch. 164, § 335.

^{** &}quot;Advisory Ruling" of Mass. Department of Public Health Gen. Counsel Donna Leviu, July 3, 1990.

In the 2003 Massachusetts legislative session, those bills include H. 361, H. 1490, H. 1491, H. 2057, H. 2969, H. 2970, H. 3480, S. 735, and S. 736.

See, e.g., McKeel v. Jasper Housing Auth., 652 So.2d 315 (Ala. Ct. App. 1994)(authority brings eviction action based on tenant's failure to pay utility bills; reversed on lack of proper notice); York Apts. V. Jelinek, 1997 WL 658939 (Minn. Ct. App. 1997)(unpublished opinion)(lease provides that non-payment of utilities is a substantial lease violation; eviction affirmed); Oneida Housing Auth. V. Gilsoul, 238 Wisc.2d 96, 617 N.W.2d 678 (Wisc. Ct. App. 2000)(unpublished decision)(lease required tenant to pay utilities; eviction reversed due to notice defects).

⁵¹ See Letter of Massachusetts Law Reform Institute to Joint Committee on Housing and Urban Development, June 18, 2003 (on file with NCLC).

⁵² The NSUAA Guidelines are on file with NCLC.

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Conclusion:

Property owners are eager to shift to tenants the costs of water and sewer services. In almost every state, they can do so subject to varying statutory or regulatory restrictions. Because the practice of submetering and RUBS intersects with many areas of law (e.g., Safe Drinking Water Act, land-lord-tenant law, and the regulation of public water systems) the submetering and RUBS laws can be housed in one or many parts of a state's codes. The ability of tenants and their

advocates to successful resist the switching of costs to tenants or to deter and defend against unfair billing practices will depend in each state on who regulates the submetering and RUBS practices of the apartment owners. We expect the trend to shift water and sewer costs directly onto tenants to continue into the foreseeable future as water and sewer bills are only expected to increase into the foreseeable future. We will be preparing a more comprehensive analysis that will also look into utility metering laws and important tenant protections in our 3rd edition of Access to Utility Service, expected to be available by the end of 2004.



A House Warming Story: An Interview With ORNL's Joel Eisenberg

Joel Eisenberg is the Director of Oak Ridge National Laboratory's Weatherization and SEP (State Energy Program) Support Program based in Washington, D.C. This program evaluates the federal Weatherization Assistance Program, under contract with the federal Department of Energy; conducts and sponsors research on low-income energy efficiency issues; developed the National Energy Audit (NEAT) tool used by weatherization programs around the country; and generally acts as a resource for weatherization program staff and low-income energy advocates.

Update interviewed Joel to learn more about the program he directs and to gain his insights into the weatherization program and other low-income energy topics.

Q: Tell us a little bit about the ORNL (Oak Ridge National Laboratory) office in D.C. — what is it? How many people work there?

Oak Ridge National Laboratory's main location is in Oak Ridge, Tennessee, where more than five thousand scientists and engineers work on a broad range of programs and projects, from particle physics to energy efficient building design. The D.C. office is in part a place where staff who work in Tennessee can hang their hats while conducting business in D.C. It's also where I am based, directing our staff of 8 to 10 people who work on issues relating to DOE's Weatherization Assistance Program and the State Energy Program.

Q: How long has your shop been in existence?

We conducted our first evaluation of the weatherization program about a decade ago and have been working on weatherization projects since then.

Q: How did you first get involve working on energy issues?

I studied regulated industries in graduate school. I then worked for the New England Congressional Caucus, with people like Tip O'Neill and Silvio Conte, both great champions of the fuel assistance program. My job was to act as energy economist for the Caucus, which was a bipartisan group consisting of the 25 members of Congress representing the six New England States. At the time issues like oil and gas deregulation were part of national agenda and I was asked to do an impact analysis justifying the increase in energy assistance from a crisis program to larger scale permanent assistance. I've been working on low-income issues ever since.

Q: Do you work in particular states in a given year, or is your research and evaluation much more directed to the national level?

We don't have resources to go to specific states unless the research has national significance. ORNL's role is to support DOE's national Weatherization Assistance Program (WAP). However, we do look at regional issues. For example, right now the "Hot Climate Initia-

tive" is high on our agenda. Through this initiative, we're looking very closely at consumption issues in warmer, southern states and trying to get a better handle on the best ways to increase efficiency in homes in that region. The whole idea behind the Hot Climate Initiative is to get a much better handle on what is going on with consumption in warmer states in order to better target and measure energy savings from weatherization.

Program investments in the south are often not as cost effective as those in colder climates. We're looking at a range of things, from management issues (how well training is done; how well programs follow recommendations from audits when installing measures) to some of the unique load characteristics and behavior in hot climates. For example, the ways in which people in warm climates use their primary energy sources (air conditioning and, to a much lesser extent, heating) are not well understood. It's hard even to measure potential savings in the south. In colder climates, heating loads are a fairly linear function of temperatures --- the temperature goes down, usage goes up. Cooling loads are not at all that linear. Customer behavior is a much bigger factor. In colder climates, people pretty much set their thermostats, and load then follows degree days. in the south, where air conditioning load is prevalent, there are a lot of room air conditioners that people turn on and off more frequently. Also, some people turn off their air conditioners when they leave their homes; others don't. Some people turn their systems on so that the house will be cool when they return; others don't. Even the effect of weatherization on heating loads in the south is less predictable because people use room heaters, making usage and savings far less predictable.

And programs that serve their low-income clients well in the south can actually increase load, for example, by installing air conditioners for elderly clients who are at risk of heat exposure.

Q: One of ORNL's tasks is conducting evaluations of the WAP. Can you tell us a little bit about that?

Under the Government Performance and Results Act, DOE has to evaluate the outcomes of WAP -

energy savings must be measured and reported. In addition, program evaluation helps DOE to improve program design.

ORNL reviews the cost effectiveness of WAP under contract to DOE. Our model relies in part on state level evaluations of the programs that are conducted over the years. While any one state level evaluation may be by its nature incomplete or inconsistent with other state evaluations, we've found through multi-variate analysis that state level evaluations are in fact useful nationally.

Our most recent "metaevaluation," that is, our process of locating, assembling, integrating and summarizing all state-level evaluations for the 1993-2002 period showed a very significant improvement in savings from WAP compared to the original national evaluation study. The average reduction in use for homes using natural gas as the primary heating fuel was 30.8% of space heating consumption, up from 18.3% in our 1989 evaluation. The savings for all end uses of natural gas was 21.9%, compared to 13.5% in 1989. The benefit/cost ratio for the program increased from 1.61 in 1989 to 2.40 in 1996.

Q: What are some of the successes you've seen in the weatherization program?

I'd point to the activity of the people in the weatherization network in terms of advocacy around restructuring. It's a superb model of what can get done in a network like this. It's been important in generating new resources to carry our weatherization and energy efficiency work. Equally, it's been important in getting the local WAP and fuel assistance networks to take on that advocacy role for reasonable prices and consumer protections. I'm very impressed that these agencies are often the only voice for low-income people. This has had an enormous impact, in terms of dollars for programs and other benefits for consumers. The WAP advocates are my heroes in this process.

Also, weatherization is a whole heck of a lot better than it used to be in terms of the amount of energy saved and the use of technology and science. There aren't many programs that serve low-income people in this country and that continued on page 6