WATTS HOT Newsletter®

YOUR SOURCE FOR ENERGY, TECHNOLOGY, SUSTAINABILITY & RESILIENCY

APOLLO Engineering Solutions®

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Sending Thoughts and Prayers

Our thoughts and prayers go out to the people of Florida, impacted by Hurricane Michael. Michael's impact is devastating to families and communities. The work of first responders, police, fire, rescue teams, together with medical teams and power crews has been incredible, bringing out the best of who we are! Apollo Engineering Solutions will donate to the American Red Cross to help victims of Michael. We encourage you, our readers to give to your favorite charity to assist in this disaster. Every dollar helps!

Summer Road Trip: Doctors of Energy

New England Regional Council of National Association of Housing Redevelopment Officials held their annual housing industry meeting in Rockport, ME. Enlightened Energy Consultants, Apollo Engineering Solutions and 2rw sponsored a booth at the summer conference.

Mike Nail, Leo Dauwer and Dick Santangelo presented a paper entitled *Game Changer: A New Funding Solution for Your Agency's Aging Energy Infrastructure*. Faced with rising utility and maintenance costs, and limited CapX funds -- How does an Agency reduce energy costs and replace and upgrade our energy using infrastructure (Boilers, chillers, elevators, windows, lighting, etc.)? The solution is a utility-based usage approach where a third party owns, operates, maintains and is responsible for the energy saving performance of the new equipment. The PHA is only charged for the energy it uses. The session was well-received as demonstrated by the interactive participation of the 35 attendees.

In July, the last of HUD's six EPC workshops *EPC Project Savings/Cost Validation* was held in Boston. Dick Santangelo (AES), Dave Birr (Synchronicity Energy Solutions) and Paul Crumpler (2rw) were the instructors. The course focused on PHAs with active Energy Performance Contracts (EPCs). The workshop was developed to specifically assist PHA staff. The course provided a deeper understanding of HUD's approved measurement and verification process, and HUD's energy and water savings validation methodology.

UPCOMING EVENTS

- **2019 NAHRO National Conference & Exhibition**
  October 25-27, 2018
  Atlanta, GA
- **Novogradac 2018 Tax Credit Housing Finance Conference**
  November 29-30, 2018
  Las Vegas, NV
- **ACEEE 2018 Conference on Health, Environment and Energy**
  December 3-5, 2018
  New Orleans, LA
- **2019 PHADA Commissioners' Conference**
  January 6-9, 2019
  Miami, FL
- **Novogradac 2019 Affordable Housing Conference**
  January 10-11, 2019
  Miami Beach, FL
- **NLIHC 2019 Housing Policy Forum**
  March 27-29. 2019
  Washington, DC

The American Council for an Energy-Efficient Economy (ACEEE) hosted its 20th biennial Summer Study from August 12-17, 2018 in Pacific Grove, California. The Summer Study Program brings diverse groups of professionals from around the world together at this pre-eminent meeting to discuss the technological basis for, and practical implementation of, actions to reduce energy use and the climate impacts of buildings. Dick Santangelo (AES) conducted an informal session to enable sharing of ideas and dialog among leading thinkers, visionaries, and luminaries regarding alternative financing options for energy infrastructure replacements.

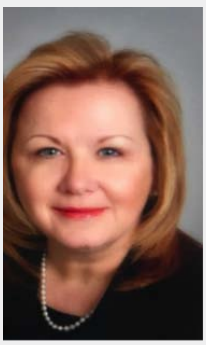
The Advanced Manufacturing Office co-hosted the Department of Energy's (DOE) 2018 Better Buildings Summit in Cleveland, Ohio from August 21-23, 2018. The Summit is one of the premier events for energy professionals to engage with one another, explore and share innovative strategies, emerging technologies, financing trends, and much more. This year, the Summit was held with DOE's annual Energy Exchange and focused on federal facility energy management. Combining the Summit with the Energy Exchange provided greater access to technical discussions, trainings, panel sessions, and networking opportunities. Bob Somers (2rw) attended the 3-day event.

The Doctors are in the House! See You in Atlanta
NAHRO's National Conference & Exhibition - October 25-27, 2018

Watts Hot Newsletter™ announced earlier in the 2018, the partnerships of Enlightened Energy Solutions, 2rw and Apollo Engineering Solutions to offer clients expansive services in RAD transition, energy engineering, resiliency, sustainability, design, financing and other services to their public-sector customers, specifically, public housing authorities and other providers of affordable housing. Given the financial and regulatory uncertainties that our clients are faced within the current political and operational environment, this alliance will bring expanded and needed services, including creative advice and innovative implementation tools to help organizations weather the storm and better position their organization for the future.

We are also seeing a new wave emerging in the utility consulting arena associated with MF (privately owned) residential property. The traditional engineering solution has proven limited in today's customer savvy world. Customers want solutions, not discussions. Technical solution must go beyond the technical answers and consider health, resiliency, capacity building, human-factors, financing and other aspects rarely considered years ago. Customers want one-stop shopping solutions that allow them the freedom to focus on their core mission. For a PHA or MF property owner, that mission is real estate and the activities associated with effectively managing their assets. Concerns over aging facilities, e.g., boilers, elevators, roofs take away resources from core activities associated with community planning, investment, property management, and asset disposition. Stop by our booth **(319)** to say hello and let us introduce ourselves and our services. Mike Nail, Bob Somers, Emmanuel Hales and I, look forward to meeting you.

As of June, Apollo Engineering Solutions (AES) has officially moved to Florida, the sunshine state. AES is continuing to expand, complementing its energy engineering and resiliency services by announcing the addition of **Mari Barr Santangelo** as Vice President.



A recently retired senior executive from the Department of Justice, Mari was responsible for the management of nation-wide security and emergency planning to include physical and cyber security and classified documents; all facets of human resources; diversity management and equal employment opportunity; facilities, the Nation's law library, and newsletter production. Her top skills include teaching and modeling effective communication, ensuring positive and profitable customer service, facilitating large groups, workshops and meetings and executive coaching. More on her services and availability to follow in later editions of *Watts Hot Newsletter*™.

Rethinking Owner-Paid vs. Tenant Paid Utilities

Utility Allowance Landscape

With advances in energy efficiency technology, state incentives, legislative changes, and innovative financing approaches like the Property Assessed Clean Energy (PACE), can it be that the balance of owner-paid versus tenant-paid utilities in the multifamily housing market space is changing?

Energy accounts for a substantial share of the cost of living in rental housing. According to the American Housing Survey (AHS), the typical renter directly paid 13% of gross rent (rent plus tenant-paid utilities) and 4% of household income for energy use in 2011. In addition, tenants pay indirectly for utility costs in their rent. Tenants living in multifamily rental buildings also pay indirectly for the costs of heating common areas, exterior lighting, and so on. The 2012 Rental Housing Finance Survey (RHFS) indicates that multifamily property owners' expenditures for energy - including both buildings where tenants pay for utilities and those where the rent includes utilities - represent about 9% of rent receipts. According to results in an earlier 2003 Harvard Public Housing Operating Cost Study, about 75% of public housing utilities are project-paid (paid by the PHA) and 25% are tenant-paid (billed directly to the tenant). This contrasts with the national multifamily market, where 83% of tenants pay directly for electricity, and 64% of tenants pay for heat (in gas heated units).

Energy efficiency adds up to real dollars saved; however, reduced utility bills are only the beginning. Energy efficiency measures enable owners, asset managers, architects, residents and communities to reap financial benefits while improving quality of life for multiple stakeholders.

For building owners, efficiency can increase revenue and asset value. Energy efficient buildings statistically sell at a premium over other buildings and receive higher rents on average than comparable inefficient buildings. For example, in one Chicago study, the net operating income of buildings with energy-efficiency improvements increased by 2.95% ($55.96/unit) in a single year, post-improvement. Rental incomes increased by almost 2.39% ($227.48/unit) annually in the year after energy-efficiency improvements were completed. Energy efficiency upgrades can reduce energy expenses and improve thermal comfort, while also addressing issues in the home environment.

Low-income households contend with high energy costs and poor thermal comfort due to poor structural conditions and energy inefficiencies in their homes. Tenants' direct energy costs, and the shares of gross rent and income they pay for energy, vary across the country. As expected, cost burdens in states with mild climates, such as California, are relatively modest. The patterns among states with less benign climates, however, are not closely correlated with temperature. Differences in energy prices, in the mix of fuels used, and in the characteristics of the housing stock offset the effects of climate.

Rent Determination and Total Tenant Payment

To better understand the complexity of utility allowance issue, a basic discussion of utility metering may be helpful. In master-metered buildings, owners pay the utility cost, and the cost to tenants is included in their net rent; there is no utility allowance to subtract. For tenant-metered buildings, each household has a separate account with the utility company and pays the utility company directly. Tenants receive a utility allowance based on an estimate of typical energy use. (i.e., kilowatt-hours or therms) by building and unit type, or an estimate of the cost of that energy. With sub-metered buildings, the owner pays for utility services.

The owner separately sub-meters the actual utility consumption provided to each dwelling unit. Where tenant utilities are sub-metered, the property must provide a utility allowance. The amount billed to the tenant must be based on the actual consumption and cannot exceed the rates charged by the utility. Sometimes, the amount billed may reflect only the consumption over the tenant's utility allowance.

Rents are set based on the affordability restrictions of the specific housing program used to fund or finance the property. Under federal rules, utility allowances can often be adjusted to reflect changes in applicable utility rates or tenant consumption at the property, particularly upon completion of a renovation that includes energy-efficiency improvements. When utility allowances are adjusted, the adjustment does not affect maximum gross rent (LIHTC) or total tenant payment (Department of Housing and Urban Development or U.S. Department of Agriculture - Rural Development) of the low-income households because federal and state programs generally limit gross rents and tenant payments. This means that as utility allowances are increased or decreased to reflect the estimated energy consumption requirement for a unit type, the tenant's housing payment to the property must be adjusted by an equivalent amount.

There are conflicting policies and practices that limit a property owner's ability to adjust utility allowances and capture cost savings in response to reductions in energy consumption or rates. For example, under California Tax Credit Allocation Committee (TCAC) rules, alternative utility allowances can be set for new construction and for existing Low-Income Housing Tax Credit (LIHTC) properties that completed solar photovoltaic (PV) retrofits under the Multi-family Affordable Solar Housing (MASH) program (MASH program is closed to new applications). However, other existing LIHTC properties that complete energy efficiency retrofits have no pathway for making utility allowance adjustments that reflect the improvements. These property owners cannot use actual consumption or other methods to reset utility allowances that might allow the property to recognize added efficiency. Usually these property owners use the local Public Housing Authority (PHA) schedule, which does not reflect actual performance. Even where adjustments are possible, expensive modeling requirements and unrealistically low utility allowances under existing PHA schedules may render these strategies impractical. Owners should also take caution because there is a risk that tenants will pay higher total housing costs if the projected energy consumption or cost savings do not materialize.

HUD limits the rent that participating landlords can charge housing voucher tenants. The HUD program allows low-income HUD participants to locate affordable housing in the private market. Each family has the discretion to find its own suitable housing, but its housing allowance is limited to 30% of their monthly income. A family's monthly rent obligations include the monthly rent payment plus reasonable utility costs.

Local public housing agencies help HUD establish monthly rental allowances for eligible recipients in HUD's public housing program. As part of a family's monthly rental allowance, HUD includes a utility allowance. A family's utility allowance is the amount designated by the public housing agency as a family's reasonable allowance to cover its monthly utility bills. Since HUD limits the rent landlords can charge their low-income HUD tenants, their rental costs must include their estimated utility allowances.

Agencies determine each family's total rental payment or housing voucher by factoring in the costs of shelter and a reasonable allowance for utility costs. Utility allowances help landlords participating in the federal housing program to receive rent payments that adequately cover their tenants' utility costs. Landlords who pay for their tenants' utility payments receive higher rental payments from the federal government than those who do not provide them. Under the HUD housing program, families who pay for their own utilities benefit from lower rental payments and receive larger housing vouchers.

Getting it Right

Setting the right policy or pricing that addresses and promote energy conservation and sustainability in multifamily rental properties is a universal challenge. In master-metered affordable properties, where the owner has a financial incentive to make energy improvements, tenants have no direct financial incentive to reduce or conserve energy consumption. Conversely, in tenant-metered properties, where tenants pay their utility bills directly, owners have no direct financial incentive to pay for energy improvements, since tenants gain most of the financial benefit from any improvements that reduce energy costs within units. In tenant-metered affordable properties, tenants have minimal or no control over improvement decisions at the property, and limited resources to invest in energy efficiency improvements. These dynamics are commonly called a split incentive.

Where split incentives occur, owners may seek opportunities to access the rent stream to finance or pay back energy improvement costs not covered by energy incentives or rebate programs. However, because rents in affordable housing are regulated and restricted, owners cannot simply increase rents as improvements are made. Instead, property owners must consider strategies to lower utility allowances provided to tenants as part of the rent calculation to account for lower utility costs. This method, where possible, can often increase the rent stream or net operating income to the owner and offers a pathway to recovering some costs of energy improvements made by the owner.

The Business Decision for Tenant-Paid Utilities or Owner-Paid Utilities

As a multifamily business owner, there are many important factors to consider when leasing out property to maximize cash flow. One factor includes the management and cost of utilities for a rental unit. Landlords should explore the options of whether to include utilities as part of the rent or to have utilities under the tenant's responsibility. Best approach is to crank the numbers. Do the numbers work for your properties by location? There are benefits and setbacks for both scenarios, and it's essential to weigh the different options before drafting a lease agreement.

The Case for Including Utilities in the Rent

1) Streamline payments and interactions for both parties

Including utilities in the monthly rate prevents ambiguous situations or negative interactions with tenants. It streamlines payment collection to just a single exchange, removing the hassle of collecting utility payments from tenants. It may also reduce an owner's administrative burden associated with tenants having difficulty coming up with utility deposits or tenants defaulting on utility payments. Including utility costs in the rent can help to reduce this additional trouble, which could strengthen an owner's relationships with tenants and improve their health and safety and value of the asset.

2) Attract tenants and often provides a competitive advantage

Having utilities included can be attractive to prospective tenants as they won't have to worry about dealing with utility payments and management themselves. This simplicity carries over to the opportunities in acquiring new tenants who might be looking for a hassle-free payment method.

3) Possible increase of revenue

Additional profit can be earned when the rent including utility cost is more than covers the expected rate for the utility costs. If the expected cost for using utility exceeds the actual usage cost, that additional income can be used to reinvest in the property or can be profit.

4) Many incentives and innovative financing approaches may favor owner paid utilities

If an owner can reduce its net operating income through greater energy efficiency with support of incentives and energy financing, increased profits can be realized. Multifamily owners in MA can use the Solar Massachusetts Renewable Target (SMART) (http://masmartsolar.com) Program to integrate solar into their properties. The incentives are generous and provide long-term (10-20 years) benefits. Other states like California, New Jersey, and New York, are among the leaders in supporting renewable incentives that may benefit property owners, including utilities in their rent structure.

A growing financing approach for multifamily owners is the Property Assessed Clean Energy (PACE). PACE financing programs allow local governments to provide financing for energy efficiency, renewable energy and water efficiency projects that building owners pay back through property tax assessments. In recent years, PACE has stimulated energy saving investments and rapidly spread across the United States. PACE legislation has been authorized in 33 states and Washington, D.C. and 16 states and Washington, D.C. have active PACE programs.

Building owners interested in participating in local PACE programs must live in a locality where PACE is offered. If a building owner is approved for a PACE loan, a local government or PACE program provides low interest financing for projects and adds an assessment to the building owner's property tax bill. Building owners receive a separate charge on their annual property tax bill for an agreed-upon amount of time, typically between 5 and 20 years. Monthly increases in property taxes remain equal to or less than amount of energy savings, creating decreased energy bills and operational costs, resulting in potential deceases in net operating expenses and profits to owners.

The Case for Tenant Paid Utilities

1) Minimize financial responsibility and liability

If bills are sent directly to the tenants, then owners need not worry about collecting payments or managing the utility account. Paying for tenants' utility expenses is an additional responsibility you may want to carefully consider.

2) Keep costs predictable

If utilities are covered in the rent, tenants may not be as motivated to conserve and be more wasteful. This can cause unanticipated increases in the utility expenses. One way to counteract these fluctuations is by allowing the tenant to pay for an individual utility. By splitting the responsibility and being more adaptable, an owner can keep expenses predictable and tenants confident in what they are paying.

3) Market rental unit at a more competitive price

If owners don't include utilities in the rent, owners can market rental unit at a lower price on listings and gain more interest from prospective tenants. A tenant likely will view a lower-cost rental as a huge savings compared to an all-inclusive price.

What is a Multi-family Property Owner to Do?

A retrofit that costs the same in two similar buildings within two communities could increase a building's value by $335,000 in one neighborhood and by only $12,000 in the other neighborhood. The capitalization rates for a neighborhood are one of the most important factors in whether an energy-efficiency retrofit is feasible for building owners. Refinancing presents a significant opportunity for building owners to realize the value of the energy-efficiency improvements and for programs to increase building owner participation.

Do the research – Research the average utility expenses for properties to forecast the costs for rental units. Anticipate the expenses for utility usage for the property so you can adjust the rent price to accommodate for the costs or realize it would be more suitable to not include utilities.

Consider the energy efficiency for every type of unit – Energy consumption and level of insulation can have a huge impact on the gas and electricity bills. Assess the appliances in the structure of the housing unit to know which utilities to include in the rent if considering this option.

Clarify owner financial goals and expectations – Are utilities in the rent to maximize cash flow or for convenience? It's important to know objectives so an effective option fits the owner's needs.

Use a valid lease agreement – To prevent future issues and misunderstandings regarding utilities with tenants, detail the expectations and responsibilities in a lease agreement. The lease agreement can ease any possible tension caused by utility disagreements and should reinforce the responsibilities between owner and tenant.

Finally, reconsider all possible scenarios before deciding on whether to include utilities or not and one that would meet the owner's objectives.

Readers are invited to write-in their thoughts on this changing landscape, sharing their experience with other multifamily owners. Send comments to wattshotnewsletter@gmail.com.

Many thanks and credits go to the following organizations for their efforts in researching, collecting and presenting the latest information on utility allowance topics.

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- *Who should pay and manage the utilities: The landlord or the tenant? Legal templates June 1, 2016*
- *Joint Center for Housing Studies of Harvard University, AMERICA'S RENTAL HOUSING; December 2013, Reducing Energy Costs in Rental Housing, The Need and the Potential, Michael Carliner*
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Are You Losing Revenues in your LIHTC Portfolio?

Accurate Utility Allowances Can Help

If you are a PHA that has Low Income Tax Credit (LIHTC) properties in your inventory and you have invested in energy savings improvements, your utility allowances (UA) may be too high, depriving you of revenues. You should be recapturing your investments in efficiency and property upgrades through a utility allowance specific to your property instead of the standard building approach. The average property has the potential of earning new rent revenues on an average $35 per unit, per month when using an approved engineering approach that captures the distinctions of your buildings. Multiply $35/mo. In newly realized revenge by the number of units times 12 months, and the savings can mount up quickly, far exceeding the cost to employ an engineered methodology. **Here are some actual 2017 national project results:**

Location	Public Housing Authority or HUD HUSM	Energy Consumption Model or Engineered UA	Average Additional Rent Revenue Per Month
Birmingham, AL	1BR ($178), 2BR ($245), 3 BR ($336), 4BR ($424)	1BR ($132), 2BR ($144), 3BR ($160), 4BR ($178)	$142 per unit, per month
Miami, FL	2BR ($132), 3BR ($196)	2BR ($90), 3BR ($102)	$68 per unit, per month
Brookfield, CT	2BR ($92), 2BR ($92)	2BR ($65), 2BR ($67)	$28 per unit, per month
Columbus, SC	2BR ($186), 3BR ($219)	2BR ($140), 3BR ($145)	$60 per unit, per month
Boston, MA	1BR ($63), 2BR ($87), 3BR ($111)	1 BR ($45), 2BR ($55), 3BR ($67)	$31 per unit, per month
Canton, MS	2BR ($151), 3BR ($200), 4BR ($205)	2BR ($95), 3BR ($123), 4BR ($161)	$59 per unit, per month
Albany, GA	1BR ($48), 2BR ($57)	1 BR ($30), 2BR ($34)	$21 per unit, per month
Elizabethtown, KY	1BR ($149), 2BR ($180), 3BR ($210), 4BR ($257)	1BR ($97), 2BR ($119), 3BR ($129), 4BR ($141)	$78 per unit, per month
Columbus, OH	3BR ($209), 3BR ($292)	3BR ($152), 3BR ($154)	$98 per unit, per month
Fort Worth, TX	1BR ($148), 2BR ($216), 3BR ($305)	1BR ($81), 2BR ($93), 3BR ($107)	$128 per unit, per month

Capture this same new rent revenue to help fund your RAD project using the HUD Alternative Utility Allowance Waiver Request. Stop by our **booth #319** to speak with Bob Somers (2rw) to find out how to participate in this program and hear numerous project success stories over the past year.

Electricity Resiliency – Keeping the Lights On

"WHEN THE TIME HAS COME TO ACT, THE TIME TO PLAN HAS PASSED"

Nothing reminds us more of this proverb than a natural disaster like Hurricane Michael. For the people and communities in the Florida panhandle, Texas, Puerto Rico, the Virgin Island and other locations recovering from disaster, we can pray, recover and plan for the next natural occurrence.

For multifamily owners, continuous power is also a vital component for day-to-day business operations. More MF operations are digitalized, and emerging opportunities often center on the latest technologies. Electricity keeps businesses in business and residents safe.

Ironically, as society becomes more and more reliant on uninterrupted power, the grid becomes more and more vulnerable. The grid is aging and exposed, and threats to the electricity infrastructure are becoming more intense and more prevalent. Between human error, increasingly intense weather and skillful cyberattacks, the threat of power outage remains a costly and life-threatening issue.

Trends show an increase in heavy downpours and flooding throughout the country. Insurance companies are paying around seven times more for severe thunderstorm damage now than they were in the late 20th century.

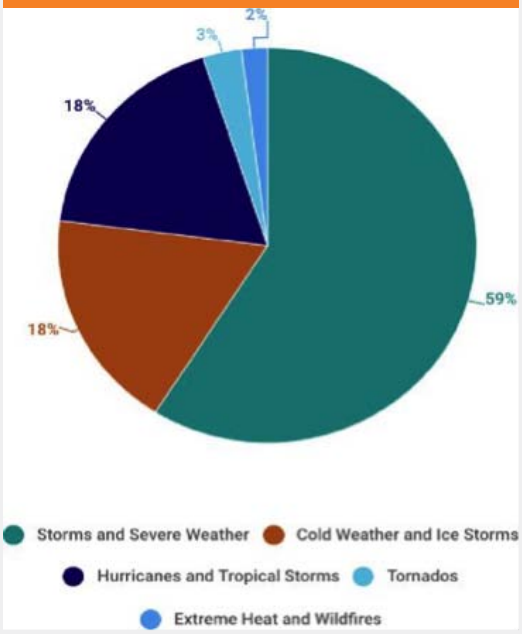
While the total precipitation is increasing across the United States, heavy rain is most dramatically affecting the Midwest and the Northeast. The precipitation falling in the Northeast has increased by 74%, and the Midwest has experienced a 45% increase. Plus, both areas are experiencing 30% more heavy downpours than in the 1960s. Even with light winds, trees and branches fall as saturated soils can't hold.

On the coastal regions of the United States, more intense hurricane seasons have become a major issue. Hurricanes cause 18% of weather-related outages, Figure 1. For example, Hurricane Sandy ripped its way through 24 states, including the most populated city in America, in late October of 2012. Hurricane Sandy became the second most costly hurricane in American history, and the damages totaled to around $65 B.

The solution to this disparity between an unreliable supply and an unrelenting demand manifests as electric resiliency. While human error and energy customers can cause detrimental power outages, the biggest threat to electricity-reliant societies is natural.

Between 2003 and 2012, 147 million customers, comprised of households, commercial businesses and industrial business, were affected by weather-related power outages. And, according to a 2013 report by the U.S. National Climate Assessment, that number is expected to increase with each year as extreme weather events are becoming more frequent and intense.

Figure 1 — Breakdown of Weather-Related Outages Between 2003 and 2012

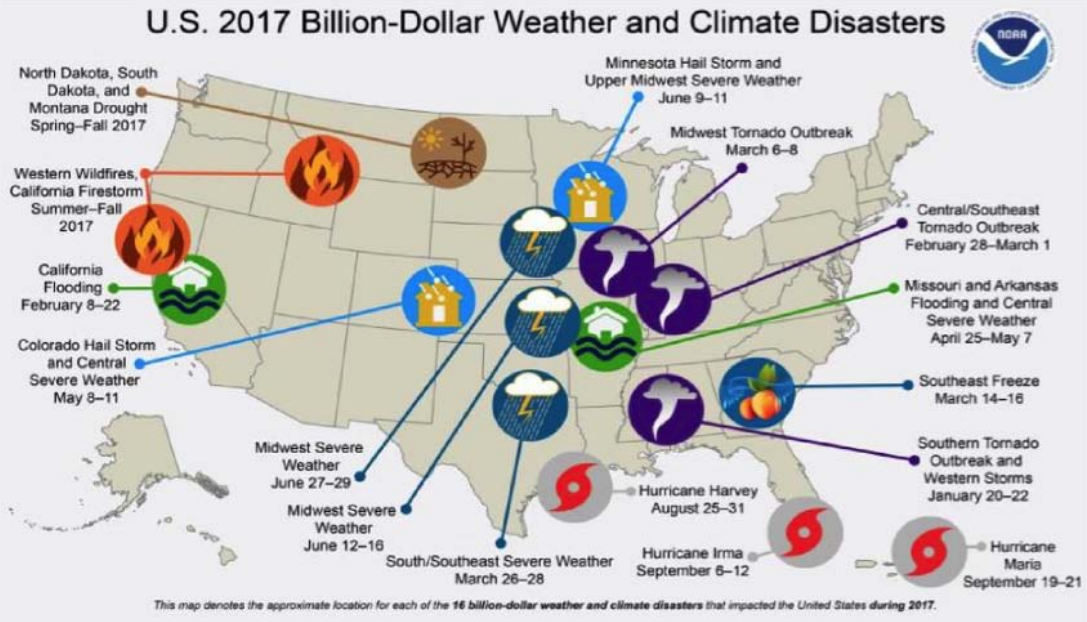


Source: Climate Central

Figure 2 shows the 16 extreme weather events whose damage exceeded $1 billion in the last year. In just one year, the country experienced eight types of costly weather disasters spread throughout the country. The total cost for just these events totaled over $350 billion.

Power outages were a major issue in the areas affected by Sandy, 8.5 million customers were without power. About 200,000 small businesses and 30 residential care facilities were closed due to power outage. Every open New Jersey hospital relied on emergency generators to make it through the storm and aftermath.

Figure 2 — Various Extreme Weather Events in 2017



Source: U.S. NOAA NCEI (2018a)

While weather might be the most prevalent threat, cyberterrorism could be the risk with the most detrimental effects. Because American society is so reliant on electricity, losing power could be one of the country's biggest national security hazards. These attacks have extreme potential to devastate the country and are, unfortunately, increasing in frequency. Other nations having the "capability to shut down the U.S. power grid, potentially causing power outages across large portion of the grid for days or weeks."

Electricity is vital for any and every business owner. So, threats to the grid also become threats to your properties and residents. Within the next 12 months, nearly 70% of businesses will experience at least one power outage. Downtime caused by outages are becoming increasingly expensive making energy resilience vital to keeping businesses in business and multifamily properties safe.

Addressing the Problem

The need for continuous power has created a demand for higher resiliency and a backup power system that protects your multifamily properties from natural hazards, physical threats and other areas of vulnerability. Backup generation allows your properties to function without disruption, despite the growing vulnerability of the grid.

Backup power can benefit businesses like multifamily properties in a multitude of ways. Statistics show that businesses with energy resiliency plans are 24% more likely to report a strong financial performance, 15% more likely to report a good brand reputation and 27% more likely to consider themselves in a good position for success.

Multifamily owners have backup power options to choose from. However, not all choices present the same level of reliability. Historically, diesel has been the choice for backup power fuel with on-site storage commensurate with the expected outage frequency and duration. However, during extreme weather events, there can be shortages of diesel fuel and impassable routes that can limit the effectiveness of diesel backup generation. This was the case during Hurricane Harvey in Houston, Texas when the storm shut down refineries and the ports used to transport the fuel. Diesel is also a major contributor to environmental pollution problems.

Unlike diesel, fuel cells are quiet and have much lower emissions. Because most run on hydrogen, heat and water are fuel cells only byproducts. Those sites that utilize fuel cells must be near hydrogen distribution facilities. Solid state fuel cells, on the other hand, use natural gas and are reliable provided there are no disruptions in natural gas distribution. The cost of fuel cells remains high in all but select market niches without government incentives.

Another option is combined heat and power or CHP. *Watts Hot Newsletter*™ reported on CHP technology in its Winter 2016 and Winter 2017 editions of the newsletter. Earlier editions of the *Watts Hot Newsletter*™ are available at https://www.apolloengineeringsolutions.com/resources.html.

Like fuel cells, CHP is a more ecological method of power. CHP systems use waste energy from power generation to meet thermal needs. The cost of CHP-style on-site generation can be affected by utility tariffs and standby rates, which can make it a less-economical choice. The CHP systems themselves are rather costly per unit of capacity, which can be capital intensive for a multifamily property owner. Natural gas is becoming an increasingly popular choice for businesses. The abundance of and ability to store natural gas underground allows it to be a cheaper and more reliable alternative to other sources of fuel. It also produces less carbon then other fossil fuels, allowing it to be an environmentally sensible option compared to diesel.

A new, up-and-coming backup power source is combining solar photovoltaic (PV) systems with battery energy storage. The costs of both technologies have been decreasing, and PV produces clean energy. However, PV assumes there will be "enough solar resource" and battery capacity to meet the load during outages that can extend well past the typical daily change and discharge cycle. PV plus storage can also require an additional cost to allow the system to island, which is a key component of a resilient system. Electricity is not sufficiently reliable, so it is imperative that multifamily property owners take actions to ensure their own business resiliency and the safety of their residents.

Many thanks and credits go to the following organizations for their efforts in researching, collecting and presenting the latest information on electricity resiliency topics.

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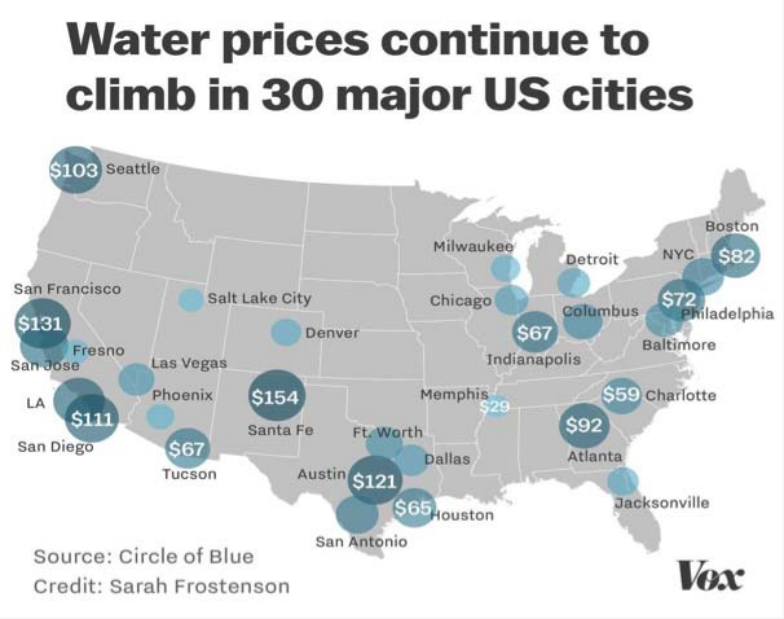
Can You Afford to Ignore Your Water Losses?

As a multifamily property owner (most owners pay for water), are you feeling the pressure on controlling your utility costs? A reliable supply of clean potable water is vital for the communities, businesses, industries, ecology, and quality of life. The impacts of climate change will intensify our challenges in managing water resources. Water resources are under stress from excessive water withdrawals; increasing conflicts among water users and demands on water resources; increasing water quality degradation; more frequent and intense droughts and floods: and, loss of species, habitats, and ecosystems. Water utility prices in the U.S. continue to move upward.

In the past seven years, water rates in the US have climbed over 50% on average, according to survey results of water rates in 30 large US cities. In some locales, like Austin, Texas, rates have soared over 150%, with a disproportionate impact on the poor.



The new data come from Circle of Blue, a nonprofit network of journalists and scientists who cover water issues. In this map of their data, you can see the average monthly cost for a family of four using 12,000 gallons water a month (the Environmental Protection Agency's estimate or average household use). The differences between cities are dramatic.

On average, Circle of Blue found that water rates have increased by 54% across the US since 2010. But changes year to year vary wildly. Between 2016 and 2017, rates only increased 4% on average, the smallest yearly increase since Circle of Blue collected data in 2010.

What's more, what you see in the map above is only a fraction of what owners are paying for water in the US. Sewer and stormwater fees are not included, which can drive up an owner's monthly. Plus, there are nearly 50,000 public drinking water systems in the US, but Circle of Blue only captures water prices in 30 major cities (they select some of America's largest cities and smaller cities to capture better geographical representation).

The problem with water prices in the US is there is no end in sight on when they will stabilize. Water prices have consistently trended upward in the past seven years, and experts don't expect this to change soon. The news is not all bad. Across the country, localities are putting in place initiatives and partnering with affected parties, engaging to in address these challenges and anticipating future needs, using approaches such as:

- Conservation and demand management
- Technical innovations
- Water transfers, markets, and water banks
- Infrastructure improvements
- Enhanced information systems and hydrologic forecasting
- Water management and efficiency practices

Rates are going up because people are coming to grips with a long-neglected need" said Tracy Mehan, Executive Director of Government Affairs at the American Water Works Association. "But it is going to have distributional impacts on low-income customers." As water rates continue to rise, more Americans will struggle to access a basic human right — clean drinking water. Rates are increasing to fund infrastructure, but poorer Americans will be disproportionately affected.

The story of how America's water systems found themselves in such dire straits begins with a post–World War II infrastructure boom followed by 40 years of neglect. The US desperately needs repair for water systems resulting in rising fixed costs. Water utilities inevitably must raise water rates. But many utilities' budgets are increasingly strained by other factors: shrinking customer bases (as in a city like Detroit) and falling water use among customers (largely due to conservation efforts). Another compounding factor is that federal funding for water infrastructure — which is how much of America's water systems were built — has essentially dried up. Federal funding for water infrastructure now hovers at just 9%, when it once accounted for more that 60% in the late 1970s.

WHAT WE KNOW ABOUT WATER USAGE

- Showering and bathing are the largest indoor uses (27%) of water domestically
- The average American uses 140-170 gallons of water per day
- If every household in America had a faucet that dripped once each second, 928 million gallons of water a day would leak away
- A leaky faucet can waste 100 gallons a day
- One flush of the older toilet can use as much uses 3 ½ gallons of water (on average)
- An average bath requires 37 gallons of water
- The average 5-minute shower takes 15-25 gallons of water--around 40 gallons are used in 10 minutes
- As much as 5 gallons of water are used if you leave the water running while brushing your teeth
- Automatic dishwashers use 9 to 12 gallons of water while hand washing dishes can use up to 20 gallons

4 Ways Multifamily Owners and Public Housing Authorities Can Help Reduce their Cost

1. Check for Water Leaks

Check pipes, appliances and faucets before a tenant moves in, whenever a problem is reported, when a lease is renewed, and after the tenant moves out. Check for leaky diverters in showers, and test for toilet problems by putting food coloring in the tank and not flushing the toilet. If any color runs into the bowl, the toilet's flapper is not sealing properly and should be replaced. The night time when most people are sleeping is generally low water usage period. If a leak is not directly damaging their apartment, people often let it go unfixed. The rental agreement should have a clause allowing routine inspections and checking for water leaks. If water meters are running excessively between 1:00 - 4:00 a.m. in the morning, it may indicate water leakage.

2. Regulate Water Flow

Be sure your toilets, showers, and sinks have flow regulators installed. It is best usually to use a 2 gallons-per-minute flow restrictor for showers and a 1.5 gpm restrictor for bathroom faucets and kitchen sinks. As the owner, you may need to invest in upgrading toilets, water fixtures, and aerators. Restricting water flow in showers is important, as restricted showers use 30-70% water less than conventional showers. Choose a shower restrictor that is tamper-proof, as residents pop off flow restrictors when they're not paying for water.

3. Educate Tenants on Water Conservation

Many tenants waste water with habits such as long showers, doing half-loads of laundry, or not reporting leaks. For some tenants, a flier or email reminding them of reasons to conserve water will be enough. Provide tenants with a checklist of ways to reduce water use, including taking shorter showers, turning water off while brushing teeth, and only running the washing machine with a full load. Post information on water conservation and tips to conserve throughout hallways and common areas. Setting a competition, setting a goal may be a way to incentive awareness.

4. Enforce the Contract

Occasionally, people simply will not do something unless they are forced. This does not mean that an owner must evict a defiant resident. Start by sending a warning letter referencing the tenant's excessive water consumption. If the resident continues to waste water, meet with them to determine the source of waste. Perhaps the tenant loves long showers and do not realize how much water they are wasting. If they still refuse to remedy their actions, consider billing them for it. While landlords in some areas are legally responsible for providing tenants with hot water, you can bill the tenant for the cost of operating the water heating equipment.

Water is essential for life, and droughts will continue to get worse with continued population growth and climate change. With conservation education, water flow regulators, routine maintenance, and a little tough love, landlords and property managers can encourage lifestyles that conserve our most valuable resource.

Many thanks and credits go to the following organizations for their efforts in researching, collecting and presenting the latest information water resource topics.

- *Sarah Frostenson (sfrostensonsarah.frostenson@vox.com)*
- *David Schwartz is the founder and president of The Water Scrooge (http://thewaterscrooge.com).*
- *Circle of Blue (https://www.circleofblue.org) - Circle of Blue unites classic journalism, data literacy and transformative connectivity. Its visionary work across the Great Lakes, U.S., China, Australia, Mexico, India and the Middle East earned the Rockefeller Centennial Innovation Award, one of the nation's top honors.*

179D Tax Incentive - Update

Are you taking advantage of every green building incentive available to your properties?

Over the past several years, Congress and recent administrations have placed a huge emphasis on green building and energy independence initiatives—and none have been more valuable to designers and builders than the Energy-Efficient Commercial Building Deduction (more commonly known as section 179D of the tax code).

History and Benefit

The section 179D tax deduction was originally passed by Congress as part of the Energy Policy Act of 2005 in direct response to broader energy usage and independence concerns. According to data released by the U.S. Department of Energy, buildings are responsible for 73% of all electricity consumption in the U.S., with about half of that coming from commercial buildings.

To curb this trend and encourage broader energy efficiency, section 179D allows qualifying building owners and businesses to receive an **up to $1.80 per square foot tax deduction** for their energy-efficient buildings placed into service during all open tax years (typically the "look back period" for buildings is three years, with some notable exceptions). Any accrued tax deductions from these buildings can be carried-back two tax years or can be carried-forward for up to 20 years.

Who/What Qualifies?

New & existing MF properties and PHA properties (3+ stories), government buildings, schools, hospitals, airports and military facilities are covered by the Statute. Measures include qualified lighting, HVAC and building envelope retrofits.

179D Extension Update: Early 2018, Congress passed a budget agreement that included several tax energy extenders, including the Energy-Efficient Commercial Building Deduction (179D) through December 31, 2017.

Chicago Housing Authority - Danita Childers, Senior Director of Revenue and Partnerships, (left), Michael Gurgone, Chief Investment Officer and Treasurer; and CEO Eugene Jones, Jr., display the savings from a tax incentive program that encouraged energy efficiency.

If you have performed energy efficiency upgrades to lighting, HVAC and building envelope retrofits prior to December 31, 2017, do not leave money on the table. Contact William J. Volker at Efficiency Energy, LLC, www.wesavegreen.com, 2101 L Street NW, Suite 800, Washington, D.C. 20037, cell 720-201-6856 or office 202-776-7709 or wvolker@wesavegreen.com.

Utility Forecast – Fall/Winter 2018

The Department of Energy's, Energy Information Agency (EIA) is predicting a colder than normal winter. EIA forecasts that average U.S. household expenditures for most major home heating fuels will be higher this winter compared with last winter. Average increases vary by fuel; natural gas expenditures are forecast to rise by 5%, home heating oil by 20%, and electricity by 3%, while propane expenditures are forecast to remain like last year.

Most of the increase reflects higher forecast energy prices. U.S. average heating degree days are expected to be 1% higher than last winter. However, realized expenditures depend highly on actual weather outcomes.

Short-Term Outlook

Natural Gas

EIA expects natural gas inventories to end October at the lowest levels for that time of year since 2005. Inventories of distillate fuel and propane are also below the five-year (2013–17) average in several regions. EIA forecasts that dry natural gas production will average 82.7 Bcf/d in 2018, up by 7.9 Bcf/d from 2017 and establishing a new record high. EIA expects natural gas production will continue to rise in 2019 to an average of 87.7 Bcf/d.

Oil

NYMEX WTI futures and options contract values for January 2019 delivery that traded during the five-day period ending October 4, 2018, suggest a range of $60/b to $93/b encompasses the market expectation for January WTI prices at the 95% confidence level.

Electricity

- EIA expects the share of U.S. total utility-scale electricity generation from natural gas-fired power plants to rise from 32% in 2017 to 35% in both 2018 and 2019.

- EIA's forecast for electricity generation share from coal averages 28% in 2018 and 27% in 2019, down from 30% in 2017.

- The nuclear share of generation was 20% in 2017 and EIA forecasts it will be slightly below 20% in 2018 and in 2019.

Renewables, and Emissions

- Wind, solar, and other nonhydropower renewables provided slightly less than 10% of electricity generation in 2017, and EIA expects them to provide over 10% in 2018 and nearly 11% in 2019. The generation share of hydropower was 7% in 2017 and EIA forecasts it will be about the same in 2018 and 2019.

- In 2017, EIA estimates that U.S. wind generation averaged 697,000 megawatt hours per day (MWh/d). EIA forecasts that wind generation will rise by 8% to 750,000 MWh/d in 2018 and by a further 6% to 793,000 MWh/d in 2019.

- Solar power generates less electricity in the United States than wind power but continues to grow at a faster rate. EIA expects solar generation will rise from 211,000 MWh/d in 2017 to 267,000 MWh/d in 2018 (an increase of 26%) and to 305,000 MWh/d in 2019 (an increase of 14%).

- EIA forecasts U.S. coal production will decline by 2% to 756 MMst in 2018, despite a 12% (11 MMst) increase in coal exports. The production decrease is largely attributable to a forecast decline of 4% (26 MMst) in domestic coal consumption in 2018. EIA expects coal production to decline by 2% (13 MMst) in 2019 because it forecasts that coal exports and coal consumption will decrease by 7% and 5%, respectively.

- *After declining by 0.8% in 2017*, EIA forecasts that U.S. energy-related carbon dioxide (CO2) emissions will rise by 2.2% in 2018. This increase largely reflects higher natural gas consumption because of a colder winter and a warmer summer than in 2017. EIA expects emissions to decline by 1.1% in 2019, as forecast temperatures are forecast to return to normal. Energy-related CO2 emissions are sensitive to changes in weather, economic growth, energy prices, and fuel mix.

Watts Hot at HUD

HUD and U.S. Virgin Islands Sign $243 Million Disaster Recovery Grant Agreement

HUD Deputy Secretary Pamela Hughes Patenaude and the U.S. Virgin Islands' Governor Kenneth Mapp announced on Thursday September 27, 2018 the grant to help U.S. Virgin Islands to recover from Hurricane Irma and Maria. With this grant, the restoration of damaged and destroyed homes, businesses, and infrastructure can accelerate.

In July, HUD concluded its final **Energy Performance Contracting Project Savings/Cost Verification Workshop** in Boston on March 20–22, 2018 provided by HUD-funded Technical Assistance provider, FirstPic, Inc. The workshop provided an understanding of the EPC M&V process and how HUD and the PHA evaluate HUD incentives and guaranteed savings to monitor and maintain their EPC program.

The participants obtain an understanding of the tools available to analyze and evaluate their EPC program. Six training workshops were planned at Field Office locations. 30 PHAs attended the Workshop; 60 PHA participants were trained. Most participants commented that they wished the course was available before they initiated their EPC to assist in their subsidy submissions. HUD does not anticipate offering additional workshops in 2018/2019.

Request for Letters of Interest and Applications under the Moving to Work Demonstration Program for Fiscal Year 2019: COHORT #1 - Overall Impact of Moving to Work Flexibility

Issued October 11, 2018 (PIH-2018-17)

HUD allows eligible public PHAs to apply for admission to the Moving to Work (MTW) Demonstration Program. MTW allows PHAs to design and test innovative, locally designed housing and self-sufficiency strategies for low-income families by permitting PHAs to use assistance received under Sections 8 and 9 of the US Housing Act of 1937 more flexibly and by allowing certain exemptions from existing public housing and HCV program rules with HUD's approval. Energy Performance Contracting under an MTW agreement can be very beneficial to the cash flow of a PHA. Call Dick Santangelo for more details, 703-627-7161.

Operations Notice for the Expansion of the Moving to Work Demonstration Program

Issued October 5, 2018 (Pages 50387 - 50402)

This Notice to expand the MTW Demonstration Program establishes requirements for the implementation and continued operation of the MTW demonstration program under the 2016 MTW Expansion Statute. HUD strongly encourages interested persons to submit comments electronically at through the Federal eRulemaking Portal at www.regulations.gov. Comments are due November 19, 2018.

Apollo Engineering Solutions, LLC Offers EPC Workshop Training

Missed HUD's Energy Performance Contracting Project Savings/Cost Verification Workshop?

Need to better understand how your EPC incentives interact with the HUD subsidy? Want to ensure your PHA receives the correct amount incentives under the EPC Program?

AES is available at your request to deliver a 2-day Workshop to your PHA and others. The workshop will address all the topics in the HUD Workshop. PHAs that attended the workshop appreciated the insight provided into incentives and subsidy calculations. Dick Santangelo, President of AES is the former Program Manager for HUD's EPC Program and developed and delivered HUD's Energy Performance Contracting Project Savings/Cost Verification Workshops in Buffalo, Philadelphia and Boston. Don't miss this opportunity to have your staff trained on the proper calculation of EPC project savings and project costs and the impact on your subsidy calculation.

The objectives of this 2-day workshop are to:

1. Provide an understanding of the roles and responsibilities of HUD and the PHA in evaluating EPC savings;
2. Educate PHAs with existing EPCs on HUDs Measurement and Verification (M&V) requirements; and,
3. Educate PHAs on HUDs methods of validating the utility cost savings and applying the results to the Operating Subsidy.
4. Discuss how their ESCO contract savings guarantee works and how it compares to HUD requirements.

The 2-day workshop is an eligible EPC expense and can be shared with other PHAs invited to attend. Call Dick Santangelo 703-627-7161 for details and scheduling.

Contact Us

For further follow-up information on the *Watts Hot Newsletter®* articles or questions about the newsletter you can call or email:

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