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THE LATEST RESEARCH AND MODELS ON  
OPTIMIZING UTILITY USAGE IN MULTIFAMILY  
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**MULTI  
FAMILY**

What's next



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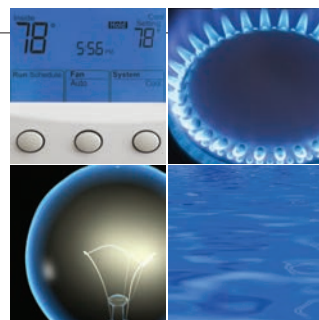
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How much is your multifamily operation leaving on the table?

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## The year of tech

2015 has been a busy year for technology. Businesses continue to use technology in new and different ways, and technology-enabled automation is one of the most talked about trends today. Companies seek to quantify customers' desires to leverage technology systems to make processes simpler, quicker and more efficient. Automation continues to advance in nearly every industry making routine tasks easier, while saving time and money. With the recent drop in cost, there's been a proliferation of smart devices hitting the market. The multifamily industry is taking note of this and is diligently exploring and developing smart apartment automation.

This issue gives an overview of some of the advances of smart technology in businesses today, most importantly what is happening here in the multifamily industry. This issue also explores technology from many angles.

In a few short years, many existing apartments will likely have some sort of smart device helping residents manage their utilities and control other features of their home like security and lighting. Our customers are interested in smart devices for potential savings and because it is anticipated that the technology will be an expected amenity.

Apartment owners and operators costs to provide automated devices are decreasing and residents may even pay more for these desired amenities. Automated smart locks, thermostats and lights are just a few of the items that have already past beta testing in many areas across the country. NWP's first innovation in this arena was introducing utility meters that connect to wireless networks so apartment owners can track utility usage by individual unit and then charge accordingly for consumption. This illustrates how technology can control costs, conserve valuable resources and gain resident support.

We touch on various smart automation technologies while reviewing the pros and cons of adoption in the multifamily industry. We lay the foundation investigating options, discussing costs, return on investment and how to manage software, data and resident participation. We look into what the smart apartment of the future has begun to look like and talk about some of the benefits and challenges of how different systems function together once installed.

Sustainability and cost control have been the basis for the framework of the smart

apartment, but expanding the features of the smart apartment is quickly becoming reality. Deciding which and where it makes sense to expand the adoption of this tech is the focus of this issue. More innovations are on the horizon, we'll continue to keep you abreast on the latest and greatest technology in multifamily and how it can benefit your residents and your bottom line. This is just the beginning.



**Ron Reed**, Publisher  
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## Finding inspiration in the everyday: Appropriating technology from other industries

As property owners, operators, and managers, we may often think that every green / sustainable idea out there that can be implemented has already been implemented.

After all, in the late 1800s there was a common belief that everything that could be invented had already been invented. Or, perhaps we get caught up in thinking that new green technologies are just far too cost-prohibitive for our communities.

If this sounds like your current state of mind, think again! With some out-of-the-

box thinking and some keen observation skills, we can find inspiration and new ideas in our everyday lives!

Take, for example, your day today. What did you do? On your way to work, you stopped at a drive-through and got breakfast, then parked your car and headed into your office building. During your lunch

break, you made plans for your upcoming vacation. And on your way home you stopped by the grocery store to grab a few items for tonight's dinner. Nothing exciting here, right? Wrong!

In each of these interactions, you experienced opportunities to observe the technologies that other industries are using to control expenses, conserve energy, and be more sustainable.

Behind the scenes at the restaurant, occupancy sensors were controlling ovens and cooktops, ensuring the optimum amount of energy use based on the current customer load. You might not have noticed, but the manager was receiving a text alert that a walk-in refrigerator door had been left open, and a sensor on the drive-through window was pulling it tightly closed, helping to cut

## Drought penalties—here to stay in areas dealing with drought

Policy-makers, legislators, and water utilities increasingly create “drought” penalties and surcharges to incentivize conservation by water users and discourage waste. In the context of dealing with a historic drought, the policy makes sense. The operation of these penalties and surcharges do not take into account how water is used (and paid for) in

the multifamily housing sector, however.

A typical drought surcharge penalty is set up to require a percentage deduction in water use for the customer of the water utility. This customer is most often the property and many of these properties use billing programs to allocate utility expenses to residents. The penalty is set up so that if the

customer doesn't reduce usage by the mandated percentage during a specified time period, the customer will receive a penalty amount on the next bill.

These sorts of drought surcharges may be allocated to residents in some jurisdictions, but not all. The residents that receive sub-metered or allocated (RUBS) bills may not realize that their usage habits are causing the property to incur the penalty and thus aren't incentivized as the penalty was intended. The California Legislature is wrestling with this issue currently (for sub-metered properties only) and seem inclined

down on unnecessary energy use.

In your parking garage, you might not have noticed the solar panel on the roof and the electric vehicle charging station in the corner, or realized the garage is utilizing building system commissioning to gauge the amount of energy the mechanical equipment is using and ensure all systems are running as efficiently as intended.

When you booked your hotel for that long-awaited vacation, you probably didn't realize that the hotel has a team dedicated to sustainability efforts, that it's undergoing a large-scale recycling upgrade, or that the staff uniforms are laundered in a way that maximizes water conservation.

And after work, as you headed in to the grocery store, you might or might not have noticed that sensors in the freezer case trigger the display light only when a shopper walks by. You might not have thought about the comprehensive refrigeration preventive maintenance program in place, the energy audit being conducted, or the recent multi-million-dollar investment in ENERGY STAR-labeled equipment.

So what is the point of listing all these behind-the-scenes energy conservation efforts that you unknowingly encountered? It's to encourage you to be on the lookout for sustainable ideas being used in other industries that could potentially be applied to the apartment industry.

When you interact with other industries (which we all do constantly if you really stop to think about it), take time to observe what technologies are in place and how those might translate to our industry.

In the above example with the freezer lights at the grocery store, would you believe that one of our colleagues translated this concept into a similar system that was applied to a multifamily parking garage? It happened, and the results have been amazing. All because someone took inspiration

from the grocer's technology.

As you are interacting with other industries, if you don't see any apparent technologies that are green or sustainable, ask! By simply taking a few minutes to chat informally with the staff, you could learn a lot.



Most people are excited about their organization's conservation efforts and are more than willing to give you a sneak peek of what they are working on behind the scenes. It's a great conversation starter and you just might make a new friend! Restaurants, hotels, retail outlets, commercial buildings... any industry could inspire

you or hold the key to a great new idea.

Another terrific source of ideas for new technologies is others in our industry. By speaking with your peers outside of your organization and even your geographical area, you are able to ask what new technologies they are using. Joining committees designed to focus on conservation and cost savings is a great way to initiate this type of dialogue.

A simple Internet search for "ideas for making apartments more sustainable" yielded several interesting results. There were so many suggestions out there that I had never heard of! I ended up on an Australian site called greenstrata.com.au, where I found a huge listing of sustainable topics combined with dozens of case studies. Who knew sustainability efforts were so on point down under?!

Another site, greenhotels.com, has an idea board and several more case studies, along with tons of information on green ideas for both hotels and apartment buildings. Clearly, regulations will vary from country to country, and not all technologies or ideas that work in the hotel industry will work in the apartment industry, but the goal is to make an effort to seek new ideas and not pigeonhole yourself into just looking to your existing portfolio or nearby comp set for new technologies. Get out there and explore. Ask questions. Observe. You might just find the next big technological idea for our industry on your drive to work tomorrow! And how cool will it be to discover it? ☀



**Lori Hanson, CAM, CAPS** currently serves as an Operations Manager for Greystar, in Denver, CO, where she is responsible for assisting with property transitions and operational project management. Since starting her career in the multifamily housing industry in 1999, she has held a variety of positions both at the on-site and corporate levels. Lori holds a BS in Management from the Metropolitan State College of Denver and a MS in Management from Troy University.

to allow owners to pass through a portion of the penalty to residents.

Until that law is passed and other jurisdictions specify how these penalties can be allocated to residents, NWP's regulatory department is working with customers to either remove the penalty or to recover the penalty amounts from residents. The most common way to remove the penalty is to show historical consumption deductions that result from the operation of a billing program to residents for water and sewer. We have been successful in arguing that the property has already achieved (prior to the penalty being

in effect) the percentage required. Many jurisdictions and water utilities have agreed to remove the penalty once we demonstrate that the owner acted in good faith (and not to avoid a penalty) previously.

Should your property's utility bill contain a new line item for drought

surcharges/penalties, the regulatory team performs a review to determine the ability to pass these amounts through. If we cannot, we will work with the appropriate entities to remove the penalty, if possible.

As always, please contact us with questions or concerns. ☀



**Michael Foote** is senior regulatory and corporate counsel at NWP where he's been on the legal team since 2008. Prior to NWP Foote was general counsel for ista North America, Inc. He has 15 years experience with utility billing law and is regarded an industry expert.





## The color of portfolio performance

As U.S. apartment REITs play sweetheart to the investment world, sustainability has officially joined the party with its own benchmarking for apartment portfolios. The Global Real Estate Sustainability Benchmark (GRESB, now a sister organization with the entity that certifies LEED buildings<sup>1</sup>) is now used by institutional investors to assess sustainability policies of real estate portfolios. Here are 7 things you must know about GRESB.

### 1. The results are in(teresting)

The 2015 GRESB survey results include data from existing buildings, in a field of over 700 real estate portfolios, providing guidance on their sustainability performance. Among the highlights: greater numbers of building owners are implementing comprehensive environmental, social and corporate governance (ESG) programs. ESG is also a catchall term for socially responsible investing.

Most of those landlords have recently shifted their focus to ESG programs, and of this sampling, the majority have achieved GRESB Green Star status for the first time.

Other trends: the growth of green leases among participants (60 percent of portfolios especially office and retail, include some form of green clause in their standard lease contract) and greater attention on the well-being of building occupants (employee health and safety checks were up by 11 percent year-over-year and nearly all partici-

pants in the GRESB report have specific employee policies related to health and safety). The majority (88 percent) actively monitors specific aspects of employee health, safety and wellbeing<sup>2</sup>.

A green lease—including simple things like setting temperature targets in a fashion that provides sustainable cost savings without negatively impacting building performance or occupant comfort—delivers benefits to both resident and landlord. It's a simple way to reduce utility consumption and save money, support sustainability, and demonstrate leadership at your communities.

### 2. Investors seek it

"Institutional investors seek ESG portfolios when investing in apartments," according to those at a recent CBRE event in Asia.

Institutional investors seek ESG performance credentials because they believe it elevates properties' long-term value. Recent research has found a correlation between

the integration of ESG and stock market performance, lower cost of capital, and better risk-adjusted returns for investors.

### 3. Lenders value it

Apartment properties not acquired by private equity, generally finance through a mortgage lender. Lenders believe that ESG reduces its exposure to borrowers unable to repay their mortgage.

Here's how it works. To mitigate risk, lenders want properties to generate steady, positive cash flow over the term of the loan. As we all know too well, this means traversing economic fluctuations, market competition, and aging product.

A new study from the University of Arizona mapped the relationship between ESG properties and commercial mortgage default risk.

They found that ENERGY STAR buildings have a lower likelihood of loan default when compared to non-ENERGY STAR buildings. Where the collateral is LEED-certified, default risk is significantly lower than non-LEED-rated buildings. This and other research is one reason Fannie Mae gives a 10-basis-point discount on ENERGY STAR and LEED properties.

### 4. It pencils operationally

Capital is important, but what can one more line of record keeping possibly do to elevate a property's cash flow, asset value or performance? When it comes to tracking utility use, the answer is, a lot.

Sustainability has long been the talk and it's not hard to understand the moral correlation to being smart about our resources. The challenge remains: business has had a harder time distilling sustainability into a monetized return.

At the core, portfolios of all types must align with regulations and benchmarking guidelines in order to satisfy regulators, and attract lenders and stakeholders. But even beyond compliance, you can't manage what you don't measure.

Measuring may be the first step in controlling these costs as it closes the control gap between resident consumption and the landlord's financial culpability.

Residents who pay their own utilities are far more likely to conserve, and generally consume 21 percent less water, and 32 percent less electricity, on average<sup>3</sup>.

### 5. It protects your equity value

Non-ESG or "brown" buildings are now penalized by the National Appraisal Foundation. The volatility of energy and water costs, consumption and green house



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legislation are just a few of the stated risks specified in the Appraisal Foundation's Practices Guide published in June. Such conditions are not hedged by ESG performance rated properties, at a cost to owners when assessing the value and risk of sustainable practices on their properties. The final effect is a lower-valued property.

## 6. GRESB: a show of progress

The U.S. Green Buildings Council (USGBC), a private organization based in Washington, D.C., most known for its LEED certification (Leadership in Energy and Environmental Design) for new construction, is driving the GRESB certification for existing buildings.

Owners report their properties' building data on an annual basis. One thing to remember: there is no difference to your overall GRESB score whether you include a lot of data on a few buildings or minimal data on many buildings. Scores focus on the amount of overall data provided.

Half of your total score is derived from stakeholder engagement and performance. Any stakeholder engagement (that is, by residents, investors, or community) or key performance indicators (such as energy and water consumption, GHG emissions and waste) data that you can provide will lift your score. The other half of total scoring is based on management, policy and disclosure, risk and opportunities, monitoring and building certification.

Be precise. Your data will be validated and checked for long-term consistency. If you are already reporting through the EPA's ENERGY STAR Portfolio Manager, the hard part is done.

Don't set blue-sky goals. The policy that you launch and record with GRESB is binding, now and forever. You will be expected to provide verifiable data showing progress against the goals you have established.

## 7. How it really works

Being green doesn't necessarily mean that you own the most efficient buildings. You just need to demonstrate improvement going forward. It's never too early. Deadline for the next GRESB survey submissions is June 30, 2016. If you are looking to participate, now is a good time to start planning for next year's submission. ⚙️

### SOURCE:

1. <http://www.usgbc.org/articles/gbci-joins-forces-gresb>
2. <http://www.nilskok.com>
3. Joint Center for Housing Studies of Harvard University, "America's Rental Housing" study, December 2013.



# Holes in new technology

As new technology is further developed, we are starting to see a trend toward affordability and corresponding real potential for return on investments in sustainability projects.

Responsible fiduciaries in any industry must assess the rational quantitative value of spending money no matter the expense category. Money spent on one thing necessarily means that you are not spending it elsewhere, and most often the expectation of good stewardship is a matter of employment and integrity. When it comes to sustainable techniques and new technology, consideration should involve reason, intellect and measurable results.

Successful energy efficiency and water conservation measures are verifiable. Reasoning to invest in technology that will yield both environmental and financial returns is imperative, but not difficult to find outside of the multifamily industry. Unique to apartments is finding the right product or service to attain those returns beneficial to the ownership group. Too often pioneers of the climate and clean energy types of technology do not understand that the principle savings an apartment operator needs to find is for the common area space. That is, investment in equipment and services that save resident's energy, water and money have yet to sufficiently prove beneficial returns for those owning and operating the facilities.

Those selling technology with what they describe as a positive outcome for the environment are often aiming at the purchaser's emotions. Insight here is found in an article from [treehugger.com](http://treehugger.com) referencing Steve Jobs' success in getting people to become emotionally attached to their iPhones, stating that "when we talk about climate, energy, biodiversity, what have you, we too often try

to appeal to reason, intellect and our inner accountant-cum-economist...instead of that sort of loving emotional relationship with the world around them."<sup>1</sup> To which we must beware, as inferred by Pepperdine University's Graziadio Business Review: Great leaders understand how to balance emotion with reason and make decisions that positively impact themselves, their employees, their customers and stakeholders, and their organizations; i.e. emotional self-control is essential to make sound strategic decisions<sup>2</sup>.

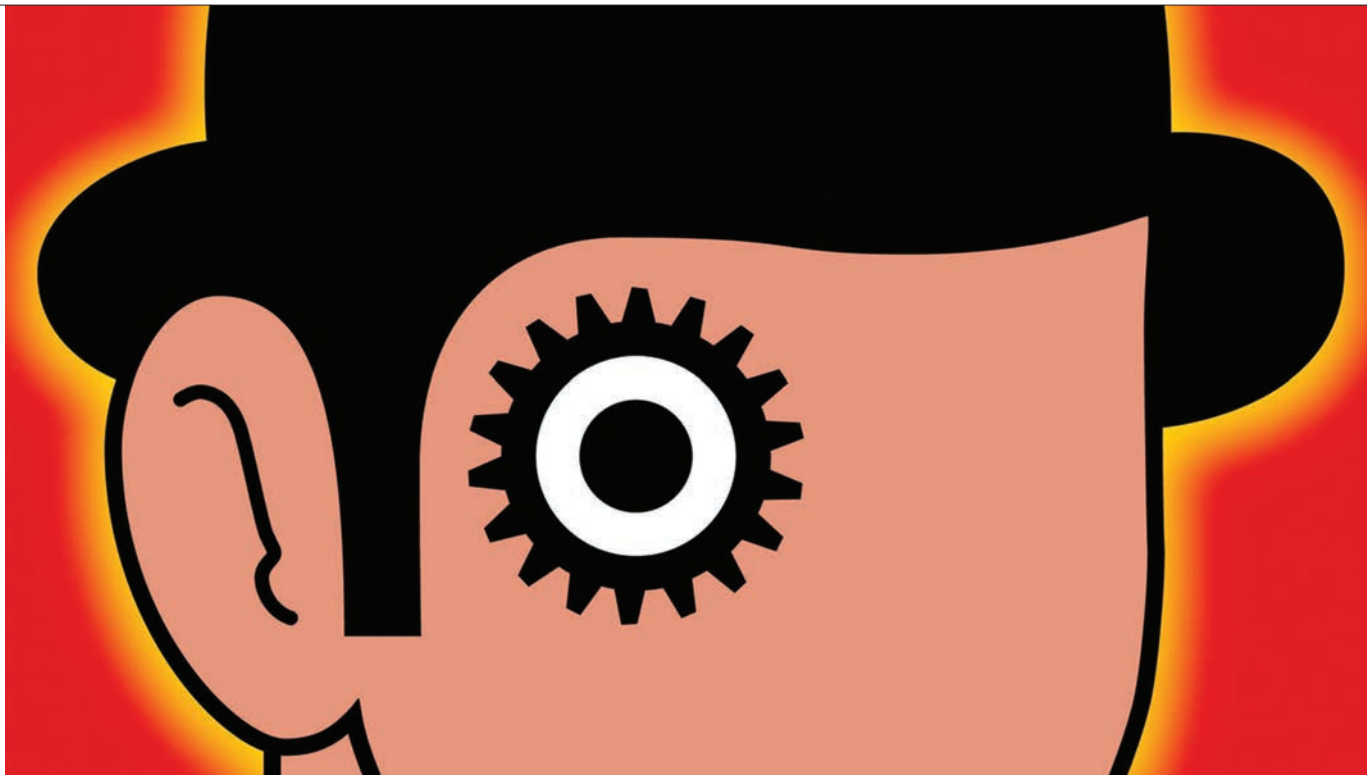
The best sustainable investment decisions will assess an energy and financial analysis that is standards-based, use historical data and will be verified by a third party (i.e. numbers that can be trusted)<sup>3</sup>. A good proposal will too provide a savings guarantee with an annual return that at least would be expected if the money was not invested in energy efficiency projects. The hole in new technology is an emotional one that may not sufficiently address financial returns on investment. With emotional constraint and a disciplined approach to "trust, yet verify", there are good investments in new technology to be made in the multifamily industry. ⚙️

### SOURCE:

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## Clockwork drought

Even if you haven't seen the movie or read the book, "A Clockwork Orange" components of this story are a part of our culture, specifically a form of aversion therapy called the Ludovico technique. If you don't know what I am referring to, allow me to briefly bring you up to speed with the extremely disturbing story about Alex, an ultra-violent criminal who, while incarcerated, is forced to undergo aversion therapy (the Ludovico technique). The intention of this therapy is to make ultra-violence undesirable in order to "cure" him of his criminal tendencies. Alex's eyes are pried open and he is forced to watch films of violence while on drugs to make him sick. It works (at least for a time) and Alex is released out into the world as a "reformed" individual.

Sadly, as fantastical as this premise seems to be, it is not too far off from our current state. We are undergoing our own form of aversion therapy with 24 hour news, constant media feeds, tweets, apps, etc. When

you really stop to consider how news and information is blasted at us like water from a high pressure hose and what happened to Alex, how different is it really?

This brings me to the drought in California. You are probably thinking... OMG is she writing about the drought again? Is that still a thing? How am I supposed to still care about the drought when Donald Trump is running for President? Have you seen his hair?

In your defense, there have been a plethora of articles on the drought. So many news blurbs, so many photo montages that we might as well be Alex with our eyes pried open staring at images that we ultimately have been desensitized to it. The only thing missing from the desensitization was the classic music in the back ground.

Yes, we are still in a drought in California. I recently went on a drought tour of the San Joaquin Valley. We drove through East Porterville, where there is no municipal

water source and most wells have gone dry. About 60 percent of the homes have been without water for the past 18 months. Each home has a giant 350 gallon drum in front of their house which a water truck comes to fill up for the residents every couple of weeks. Sadly, the water in the drum is not fit for drinking; only showering and flushing. Residents must procure bottled water for drinking and washing dishes. The citizens of East Porterville are some of the poorest in the nation. The per capita income is about \$11K annually. I know what you are thinking... OMG, is she asking me to care again? Didn't she see the picture of Kim Kardashian's butt?

To make the drought more challenging, California farmers are seeing their greatest profits in almond production. Currently, California farmers are reducing the amount of land they use for drought tolerant crops, like tomatoes, and planting almond trees. In fact 80 percent of the world's almonds are produced in the San Joaquin Valley. Almonds are a water intensive crop. According to data shared at a Water Conservation Showcase in 2014, it takes 1,280 gallons of water to make a pound of almonds. It only takes 30 gallons of water to make a pound of tomatoes. Yet we, as consumers are scarfing down almonds, almond butter, almond milk, and candy with almonds like the water used to create those nuts is inconsequential. We are creating huge demand for California almonds. We want to pretend that we care that Nestlé's



**Mary Nitschke** is passionate about utilities and should, perhaps, switch to decaf. She is the first president of the Utility Management Advisory Board, holds an Energy Resource Management Certificate from UC Davis, two BAs from UC Berkeley and is Director of Ancillary Services for Prometheus Real Estate Group, Inc. Nitschke has the first law of thermodynamics posted by her office door, and a 1970 Lincoln Mark III with over 400 bhp, in her driveway in Northern California.



water bottling plant is in the middle of drought riddled California when 10 percent of the total water of the state is used for almond growth. Fun fact, that 10 percent of total water is only the surface water; that doesn't even include the unmetered ground water that farmers are pumping to grow and maintain this crop. I know what you are thinking... but I want it. Almonds fit my low carb, high protein skinny jeans lifestyle. Hey! I see an icon that will tell me how to lose my belly fat.

Additional challenges of the drought in California with respect to our industry surround our own irrigation systems, water features and how our residents use water. There are rate increases of upwards of 20 percent or more, there are drought penalties, irrigation restrictions, water feature restrictions, power washing restrictions and pool filling/construction restrictions. There is even an app so that people can report your community if you have a broken sprinkler head, which leads to fines and penalties.

There is so much information, so much happening with the drought, that it becomes completely overwhelming. Many property owners are pondering their curb appeal during a time when mandatory conservation is required. Yet, because these restrictions have persisted, it is easy to become numb to the problem and cease to take action. In lieu of action, some owners/managers simply throw their hands up and say "it is what it is." Aww! Have you seen the YouTube video of the baby panda sneezing? So cute!

What makes our desensitization even worse is not that we were overloaded with information but there doesn't seem to be a clear clean action plan. We cannot do a dance and make it rain, and we cannot effectively move water from flooded areas of the nation to drought areas so what action is there even for us to take. What really can multifamily do? As we stare at this issue with our eyes peeled open, we only can make emoticons to express our distress but are not able to react. The constant stream of information has not inspired action but inaction. Our fight or flight response has become a quick internet search for puppies learning to swim.

Technology to the rescue? Maybe. I believe that as an industry we can use this drought as a heuristic template for improving not only our assets but our lives. We need take time to pause and really look at how we are using water and appreciate the vital-ness of this resource.

Currently, there are technologies on the market that we can leverage to maintain how we want our properties to look and feel, while using less water. Did you know that you can use a 0.5 gallon per minute aerator in bathroom faucet and most residents will not notice the difference? There are 1.0 gallon per minute shower heads that allow bathers an even better shower experience than 2.0 gallon per minute shower heads. In my experience with the 0.8 gallon per flush toilet, not only have I achieved reduced water usage but because those toilets work better than 1.6 gallon per flush toilets, I

have fewer maintenance calls on them. Weather based irrigation systems consistently use less water than traditional timers and have a payback of four years or less. Switching out landscapes to drought tolerant landscapes not only saves water, but modernizes the look of existing assets (great if you need to reposition). I have experience with low flow, high efficiency sprinkler heads and nozzles that use less than 50 percent of the water than older, less efficient models. Sub metering your units for water gives your residents the ability to measure and subsequently manage their own water usage. These are not new technologies; this stuff has been on the market and proven itself. Still, we are afraid that we have missed something and have stalled out.

Fortunately for Alex, the effects of his aversion therapy wore off in time. As creepy as it is for Alex to regain his appetite for violence, it is hopeful to me that we can once again become sensitive to the issues that surround us and effect change. We will plant landscape that is appropriate for our climate zones and leverage technology to measure and manage our consumption. We will install fixtures in our communities with a social conscious.

We will encourage our residents to conserve water, take shorter showers and only do laundry when they have a full load. We will purchase our foods with an understanding and appreciation of what it takes to produce those foods. We will remember that as human beings we are more than 60 percent water and that we will die without it. ☀



The .5 gallon-per-minute (GPM) faucet aerator is easily the biggest bang for your buck in terms of how much water and energy you conserve. The traditional aerator is about 2.2 GPM, making the .5 GPM a 77 percent reduction in flow.



This water efficient shower head uses only 1 gallon of water-per-minute, conserving energy and water for a better environment and a lower monthly bill. In fact, the manufacturer suggests that the average household can save over \$135 a year on water and energy costs



Choose plants that fit your conditions and group them together according to watering needs. Look for drought-tolerant plants. Many have gray or silver foliage; others have thick, fleshy leaves and are called succulents. These plants naturally need less water.



## Apartment of the future

While much has been written recently about the potential application of smart home technology to the multifamily industry, we are just starting to get a glimpse into the way it will impact the living in and management of apartments.

Right now, a number of communities around the country are starting to test the initial Smart Apartment applications. Among the technologies getting implemented now include thermostats, light switches, and door locks. The key for those tests are not just using the same devices that can be found at Home Depot or Best Buy, but offering a platform for communities to manage and control those devices.

These Internet-enabled and integrated devices offer an opportunity to provide win-win benefits for both the residents and the owners and managers of those units. For the residents, they can lower their utility spend by letting the thermostat optimize usage based on their normal schedule and leverage features via their smart phones to configure their lights, locks, and other devices. For properties, they gain the opportunity to

potentially charge more for units with smart devices and/or lower costs by better managing the units.

Demand is building and the integration of the devices will drive major changes to apartment life. Residents, particularly in Class A properties, will be sold on their ability to further manage their lives digitally. This may include using the camera at their front door to confirm the arrival of a friend or service provider and then provide them access via smart locks. They may want to turn on the shower and then have it be ready at their personal temperature choice (without wasting water) when they enter the bathroom. Residents will also expect to be able to add their televisions and other devices to one system so that all items can be managed from the same application.

At the same time, properties of all types

will benefit from lighting that changes color when the fire alarm or smoke detector goes off (red is much more visible than white in a smoky room). Other opportunities in the near future for properties include setting minimum and maximum thresholds for the thermostat when the unit is not occupied (or in affordable housing and paid by the property), giving a service provider access to the unit for a window of a few hours via the locks, and using sensors to prevent excessive moisture that results in mold. Programs are starting to emerge both from the utilities and from insurance providers to subsidize the installation of smart products.

All of these applications represent a vision into the significant advancements that we can easily anticipate for the apartment of the future, since the technology exists today. The real accomplishment will not be just having this smart technology, but rather providing an eco-system that addresses the core challenges of the market: the ROI model that overcomes the upfront equipment and installation costs; easy to manage platform for the high turnover of the property staff; security / policies that minimize resident concerns about big brother; and communication systems that do not rely on unit-level Wi-Fi since that is resident, rather than property, managed.

This is really just the tip of the iceberg in terms of where the application of smart technology can go. Looking to other industries, such as hotels and single-family homes, following their lead will still be sufficient to provide huge changes to apartment living over the next few years. And the companies that lead have an opportunity to differentiate versus their competitors. ⚙️



**Howard Behr** is a Vice-President: Product Management + NWP Submeter. Howard has held a number of executive roles over the past 13 years at NWP, including the management of business development, sales operations, and implementations. In particular, he successfully oversaw the acquisition and incorporation of three direct competitors and the creation of a nationwide submetering division that quadrupled in size over its first four years.





## Making the connections in software engineering

These are exciting times for technology in the multifamily industry. We live in a world that demands convenience, a world where tools, websites and apps bring virtually everything to your fingertips.

Our industry is moving fast in the direction of connecting people, devices, and systems, making processes as easy and efficient as possible. The biggest impacts are felt when we develop new connections that didn't exist before. From the simple exchange of data, to shared functions, to embedded applications, there is always the potential to create new connections, new opportunities.

Connections begin with data, our information. The days of faxing documents or transferring files via FTP are being replaced more and more with direct Web service API communications, and although web service integration isn't new, security concerns are more important now than ever. Work needs to be done to ensure not only that we're

exchanging data correctly, but that we're doing it safely, protecting usernames and passwords, using identity servers & security tokens, employing authentication and authorization protocols, etc. We read about security hacks daily. It's no trivial matter to secure the transmission of data via the internet, and new integrations must not compromise the security of client data that can include sensitive information.

In addition to keeping data safe, the next challenge is making data valuable, connecting people with answers to their questions. Space is cheap, and we've buried ourselves in data points, making it more and more challenging to organize, retrieve, and extract meaning. A static report has a pur-

pose, but its usefulness is limited to its target audience. More widespread uses for data among wider audiences will require re-thinking how information is conveyed. Coming soon: dynamic reports, natural language queries and voice recognition programs (think Siri or Cortana), all ready to dissect data and garner answers faster than you can boot up your 2-year-old laptop.

Establishing and utilizing connections between disparate hardware/software systems in today's world of IoT (the internet of things) is a new, evolving market. Like the different members of a team, devices can be linked to leverage their collective strength and knowledge. With hardware & software advancements arriving fast-and-furious, an equipped network in the hands of a skilled organization can offer new features and purposes, proactively saving time, energy and money. Imagine a smart apartment, a smart property management office, a smart bank of sub-meters, etc., and you begin to scratch the surface of what's coming. The technology winners will be the ones who bring real meaning to the IoT connections, providing measureable benefits to residents, managers, and owners. Beyond just the cool factor of living & working in a 'smart' environment, there are real benefits to both the environment and to properties' pocketbooks.

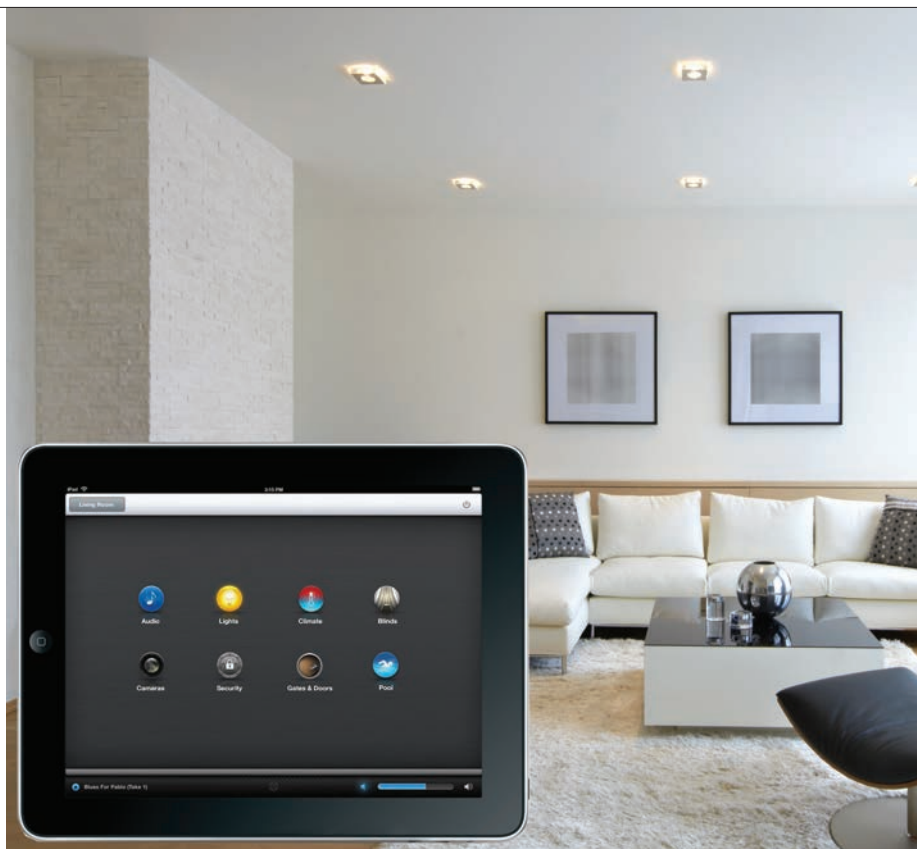
Inter-connected organizations are better at satisfying the demanding world of convenience. Clients are counting on different companies to be accessible & interconnected now more than ever. They want the best-of-breed in multiple areas, and they want (and deserve) cooperation to get the greatest value. The isolationist, one-size-fits-all company is going to trail the others that embrace partnerships, teamwork and open integrations, the ones that work together make great accomplishments. Look for more open integrations, embedded functionality, and cross-company projects that sprout from these partnerships, reducing barriers that waste time and resources.

Our world demands convenience and connections, a cyber-sphere full of features and functionality. Satisfying our clients means developing applications that support all glass from large-screen monitors to mobile-phones, smartly providing the right information via the right means at the right time (no more burying people in mountains of emails and reports), bravely pioneering the new and difficult (and sometimes fruitless) technologies that make a difference, and cooperating with other organizations to leverage key strengths. Evolving technologies offer limitless opportunities to improve our industry. ⚙️



**Jason Knudsen** is Director of Software Engineering for NWP. Since joining NWP in 1999, Jason has been a part of the software development team, ranging in experience from programming to project solution architect to overseeing the development of NWP's products & services. In 2012, Jason helped establish NWP's research & development office, NWP Labs, in Minneapolis, MN. Prior to his tenure at NWP, he worked at Andersen Consulting in the utility CIS industry.





## Smart apartments

Home automation is nothing new to most home owners, but it is to apartment owners, managers and dwellers. Smart homes include anything from lighting, appliances and locks, while home automation includes products that can be programmed to function automatically.

Smart home gadgets were designed to save you time, energy and money, all while making your day to day life easier. Wouldn't you love to wake up to your coffee pot brewing, bathroom lights on and air temperature just right?

### Vetting through options

There are many different systems right now for residential homes, but what about apartments? With so many options in the marketplace, it's difficult to figure out what

works best for apartments. Smart locks, lighting, thermostats and outlets are all available for apartment units to save residents time and money. While these systems are great individually, in an ideal scenario, the systems would all talk to each other, creating one smart home solution for the end user. Ease of accessibility and use of these smart products is key for both apartment managers and residents.

Since there are so many hardware options



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in the market, the decision on what product to install on a property can be difficult. There are companies that operate the back end system so that several products can run simultaneously through one mobile web system. These companies typically work with specific hardware, so it's important to choose hardware that's comparable.

Smart locks, smart thermostats, lighting and outlet controls seem to be at the top of the list of hardware choices for smart units. Will these products be around in a few years? Will they constantly need repair and updating? These are all considerations when selecting the actual product to install in smart apartments.

### Cost and return on investment

Most smart products have a mobile app that residents use to control the product. Typically, these apps are free when you purchase the hardware. If you use an enterprise system, which would link all these products together, that will come with a monthly cost as well.

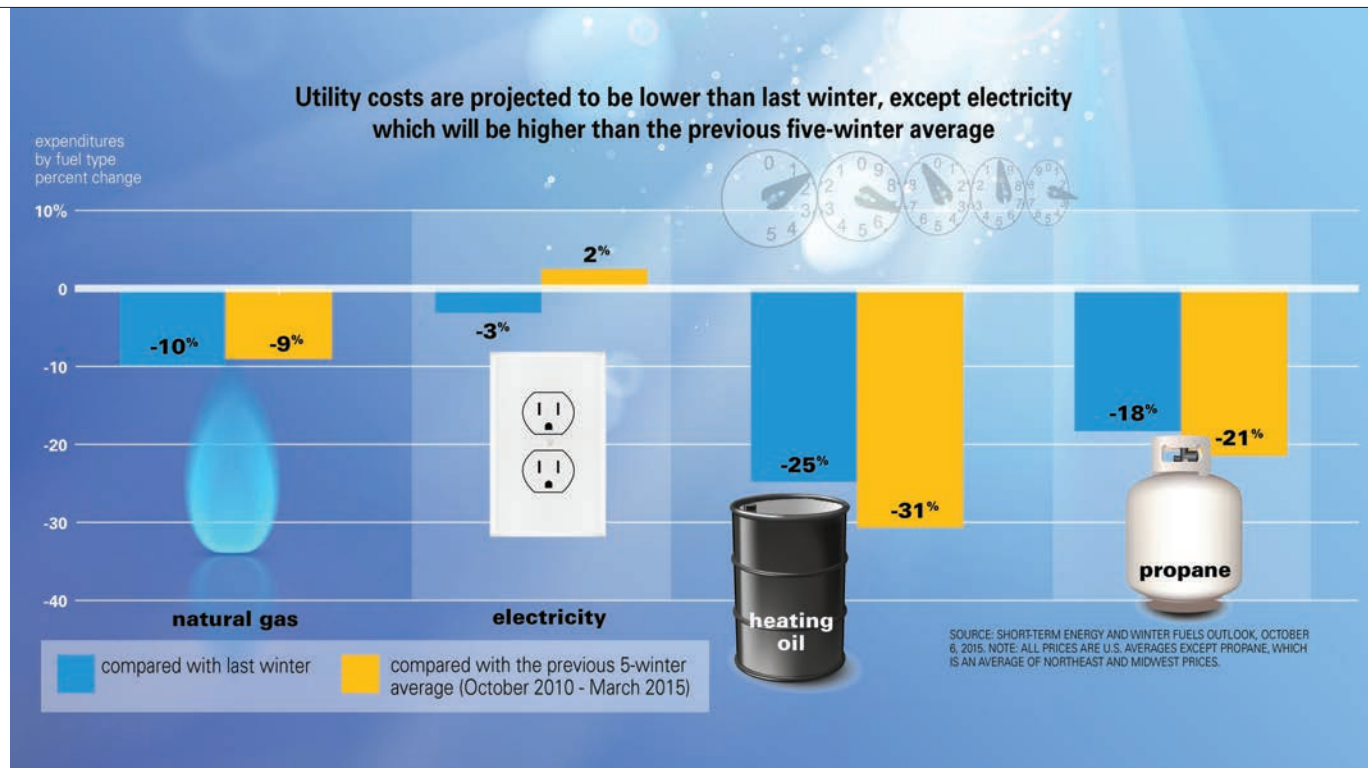
The hardware itself can have a significant cost—anywhere from \$200 to \$600 per unit on a bundle of products. This investment is considerable for new technology in the apartment industry. Can you get an upcharge on rent for these smart units? Does the owner purchase the product out right or lease the hardware? Will residents be willing to pay more for an apartment with these capabilities?

### Managing hardware, residents and data

Once the hardware has been installed and set up, residents can begin to use the products. Managers will need to be trained on the hardware and software to sell these smart features to residents and to help with initial set up and questions. Questions and troubleshooting needs could become a problem for managers and their team if the product and software is not simple to use. What if the hardware doesn't work? Will residents rely on management to fix and handle all issues?

These smart products, if linked to a back end system that management has access too, could create a lot of data. This data could be used to study resident behavior, monitor energy consumption and for many other things. Does this lead to privacy issues for residents?

Overall, the desire for smart homes seem to be on the rise. With the new generation of apartment dwellers, being connected is key. To ensure you make the right decision in regard to product and software, vet through your options and reach out to others in your industry for advice. ⚙️



## The energy procurement outlook in 2015 has been all blue skies

Did you feel that gust of wind? That was from the fall of gas prices. Every 1-cent drop at the gas pump means about \$1 billion back into the economy and the pockets of consumers say experts, so 2015 saw quite an infusion of found money. But with the biggest windfall behind us, attention shines even brighter on rent and utility expenses.

The brief relief, such as it was, is over. Whereas other rising costs, such as rent, may have been somewhat muted by the extra cash from the pump, this turns the dial up on keeping rent costs efficient. High rents place even greater pressure on residents and landlords to control utility costs.

### Coal today, gone tomorrow

Natural gas took the lead in generating U.S. electricity in September, surpassing coal for the second time ever says the U.S. Department of Energy (DOE). Natural gas

fueled 35 percent of total electricity production compared to coal's 34.9 percent output. The first time this happened was April 2015.

And there's more good news. Energy costs are projected to be down this winter according to DOE's most recent annual prediction. This is due to forecasted increased temperatures across most of the country through the winter months, and lower per-unit energy costs.

Along with predicted warming temperatures, high inventories of propane will translate to savings. Having built inventory

through the summer, supplies remain high. As such, wholesalers can seek to unload their gas and that will lead to better prices.

According to the U.S. Energy Information Administration's (EIA) October edition of their Short Term Energy Outlook, they projected that average U.S. household expenditures for natural gas, heating oil, and propane during the upcoming winter heating season (October 1 through March 31) will be 10 percent, 25 percent, and 18 percent lower, respectively, than last winter, mainly due to a combination of lower fuel prices and lower heating demand. EIA predicted that occupants using electricity to heat their homes will experience 3 percent lower costs than last year at this time.

### Check the weather

Long-term forecasts by the National Weather Service (NOAA) predicted this year's winter temperatures east of the Rocky Mountains to be warmer than last winter. This includes heating degree days, that is where outdoor temperatures require energy use to maintain an indoor temperature of 70 degrees Fahrenheit, in the Northeast, Midwest, and South, respectively, at about 13 percent, 11 percent, and 8 percent lower. In the West, winter is expected to be 12 percent colder than last.

This is good news for landlords, as rents continue to rise for lack of inventory and energy costs are lowered due to warmer weather. ⚙️



**Darren Novich** is managing partner at The Energy Link where he reduces energy costs for some of the largest multifamily companies in the country. Novich has also worked with several energy supply providers. He served four years in the U.S. Air Force and graduated from the University of Florida. Novich lives near Atlanta, Ga. His knowledge and experience as an energy trader gives him the advantage against any therm or Kwh.

# Mandatory Benchmarking: Multifamily energy disclosure requirements



For more information, go to [www.nwp.com/benchmark](http://www.nwp.com/benchmark)

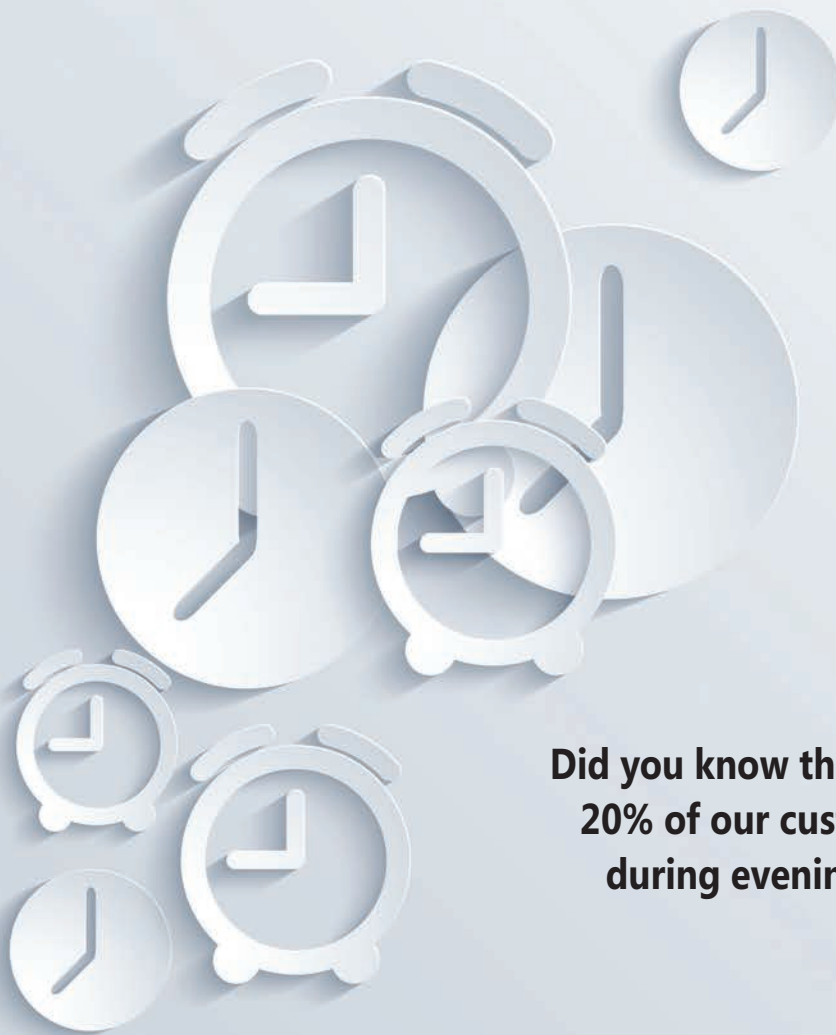
TOWN	LAW / ACTION	BLDG SIZE	DISCLOSE TO	PENALTIES FOR INCOMPLIANCE	ANNUAL DEADLINE
<b>Austin</b>	<b>Energy Conservation Audit &amp; Disclosure (ECAD)</b> Unlike many other energy disclosure laws, Austin does not require multifamily owners to report annual building usage data for energy or water. (However, energy audit is required every 10 years and high use properties have mandatory usage reductions.)	All complexes (no minimum size)	Residents and buyers upon request or lease renewal; audit results also must be posted at property	Class C misdemeanor and subject to fine up to \$500. If criminally negligent, a fine of up to \$2,000 may be assessed.	N/A
<b>Atlanta</b>	<b>Commercial Buildings Energy Efficiency Ordinance</b> Multifamily owners must report their usage for energy. Energy audit required every 10 years.	≥ 50,000 sq. ft. by 6/1/2016 (≥ 25,000 sq. ft. by 6/1/2017)	Government agency (who will disclose on public website) annually	Written notice of first violation; Fine of \$1,000 if 20 days late, an additional \$1,000 every year thereafter	June 1
<b>Berkeley, Calif.</b>	<b>Berkeley Energy Saving Ordinance (BESO)</b> Multifamily owners must report their usage for energy and water. All buildings > 4 units must complete energy assessment.	≥ 50,000 sq. ft. by 10/1/2016 (eventually phasing in all buildings > 4 units by 2020)	Government agency annually	TBD	October 1
<b>Boston</b>	<b>Building Energy Reporting and Disclosure</b> Owner must report whole building data for energy and water. This includes aggregated resident data which can be obtained from the utility providers. (Also, every 5 years an energy assessment or energy action is generally required.)	> 50,000 sq. ft. or 50 units (> 35,000 sq. ft. or 35 units by 5/15/2017)	Government agency (who will disclose on public website) annually	Non-residential tenants: \$35 per violation for not supplying owner with energy data. Residents face no fines. Owners pay \$75-\$200 / day depending on size / use of building up to \$3,000.	May 15
<b>Cambridge, Mass.</b>	<b>Building Energy Use Disclosure Ordinance</b> Owner must report whole building data for electricity, natural gas, steam, fuel oil, and water. This includes aggregated resident data which can be obtained from the utility providers.	> 49 units	Government agency (who will disclose on public website) annually	City will issue written warning for first violation. Any subsequent violations can be up to \$300 per day.	June 1





TOWN	LAW / ACTION	BLDG SIZE	DISCLOSE TO	PENALTIES FOR INCOMPLIANCE	ANNUAL DEADLINE
<b>Chicago</b>	<b>Chicago Energy Use Benchmarking</b> Owner must report whole building data for energy. This includes aggregated resident data which can be obtained from the utility providers. An engineer must examine data every 3 years and certify data to the City.	≥ 250,000 sq. ft. (≥ 50,000 sq. ft. by 6/1/16)	Government agency (who will disclose on public website) annually	\$100 to building owner for first violation, \$25 per day after that if not fixed.	June 1
<b>DC</b>	<b>Clean and Affordable Energy Act</b> Owner must report whole building data for energy and water. This includes aggregated resident data which can be obtained from the utility providers.	> 50,000 sq. ft.	Government agency (who will disclose on public website) annually	DDOE will issue a written warning. If violation is not corrected after 30 days of written notice, DDOE can fine owners up to \$100 per day.	April 1
<b>NYC</b>	<b>Local Law 84</b> Owner must report whole building data for energy and water. This includes aggregated resident data which can be obtained from the utility providers. Audit required every 10 years on buildings > 50,000 sq. ft.	> 10,000 sq. ft	Government agency (who will disclose on public website) annually	\$500; continued failure \$500 per quarter with a maximum of \$2,000.	May 15
<b>Philadelphia</b>	<b>Building Energy Benchmarking Ordinance</b> Owner must report whole building data for energy and water.	≥ 50,000 sq. ft.	Government agency (who will disclose on public website)	\$300 fine for the 1st 30 days, and then \$100 per day.	Nov. 1
<b>Seattle</b>	<b>Building Energy Benchmarking and Reporting Program</b> Owner must report whole building data for energy. This includes aggregated resident data which can be uploaded to a property's ENERGY STAR account by the utility providers.	5+ units	Government agency annually; residents and buyers upon request	Quarterly fines \$500-\$1,000 based on building size. Owner and residents first violation: \$150.	April 1

Regulations just passed at press time for Boulder, CO and the state of California. Some jurisdictions have passed energy disclosure laws that currently do not apply to multifamily: Minneapolis, Portland, San Francisco, Montgomery County (Md.), and the state of Washington. Areas expected to add similar legislation include Columbus, Ohio, Denver, Houston, Los Angeles, Orlando, Salt Lake City, San Diego/Chula Vista, Santa Monica, Calif. This chart is merely an overview and not intended to be a substitute for legal advice.



**Did you know that NWP takes over  
20% of our customer service calls  
during evenings and weekends?**

## **Easy, Reliable Results.**

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Sunday 7:00 am - 3:00 pm PST



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