



## Engineered Utility Allowances

Increasing Sustainability of LIHTC Properties and Improving Quality of Life for Residents

A pilot program of NeighborWorks America

Implementation and technical assistance by *Zapling, A division of 2rw Consultants, Inc.*

# Engineered Utility Allowances: Increasing Sustainability of LIHTC Properties and Improving Quality of Life for Residents

*Now that many Low Income Housing Tax Credit (LIHTC) properties are being built or renovated to higher energy standards than in the past, many owners and managers find that traditional tenant utility allowance models are overestimating electricity, fuel and water consumption. Such excessive utility allowances discourage energy conservation by residents and reduce property revenue. Engineered utility allowance calculation methods help owners and managers of energy-efficient LIHTC properties define appropriate utility allowances to encourage an improved living experience for residents, while also increasing property revenues in an era of declining resources.*

**Synopsis:** The following study details the results of a pilot project of NeighborWorks America, which asked 2rw Consultants to evaluate the effectiveness of engineered energy calculation models to adjust utility allowances at affordable housing properties across the United States. NeighborWorks then engaged Community Housing Partners (CHP) to assess the results. The results indicate that using the engineered utility allowance method to estimate usage and costs can be beneficial for affordable housing properties in two ways. First, owners and managers of LIHTC properties will find it easier to fund and recover investments in energy efficiency. Second, pairing the engineered energy calculation method with a resident education program can be used to improve resident use and understanding of energy-efficient components in their homes.

## Affordable Housing Has Become Increasingly More Energy-Efficient and Healthier

Over the past several decades, building codes have incorporated conservation technologies and more efficient building practices than previously implemented. These codes have been continuously adopted and regularly revisited by the U.S. Department of Housing and Urban Development (HUD). State housing authorities have also passed revisions to their construction and rehabilitation standards for

affordable housing. The new standards include updates to building construction techniques and the use of more energy-efficient components such as doors and windows, as well as the use of ENERGY STAR-certified appliances, including refrigerators and dishwashers.

Not only have construction codes and practices improved, maintenance standards have also been upgraded. Many currently occupied LIHTC properties have undergone some level of renovation since their initial construction, including the installation of new energy-efficient appliances.

While these energy-efficiency strategies are intended to reduce consumption and costs, they also offer other advantages.

The adoption of these energy-efficiency measures has substantial health and household-benefits to the residents of affordable housing, such as improved comfort and indoor air quality that result in healthier and safer homes. For residents, these improvements often translate into fewer sick days lost from school or work in addition to reduced utility costs. In turn, this improved quality of life often translates into increased resident retention for property owners and managers.

### **Traditional Utility Allowance Models Have Not Reflected Changes**

Affordable Total Housing Costs are calculated as 30 percent of a household's income dedicated to a combination of rent and a utility allowance, according to HUD guidelines. The Internal Revenue Service (IRS), which is responsible for regulating LIHTC properties, allows five primary methods for calculating utility allowances, as outlined in 26 CFR §1.42-10 (see **Table 1** on **Page 3**).

Unfortunately, even as building codes and practices have changed, the tenant utility allowance calculations cited have not always been adjusted for consumption-reducing improvements. The result is utility allowances that are greater than required.

While energy-efficient improvements have been made in LIHTC properties with the purpose of reducing energy consumption and costs, those benefits were not reflected in the energy allowances that states and localities provide to affordable housing residents. Those allowances are part of the total housing cost calculation made to assure that the homes are truly affordable to residents. Energy-efficient upgrades are not necessarily recognized in the traditional HUD Utility Schedule Model, Public

Housing Authority (PHA) allowances or utility company estimates – resulting in regularly overestimated utility allowances.

<i>PHA and State Agency Estimates</i>	<ul style="list-style-type: none"> <li>• Typically integrates data and information from PHA’s housing stock</li> <li>• Often based on housing stock built more than 20-30 years ago</li> <li>• Often yield overestimated allowances when applied toward new or newly renovated properties</li> </ul>
<i>Utility Company Estimates</i>	<ul style="list-style-type: none"> <li>• Utility company provides estimate for units of similar size, construction, and geographic area</li> <li>• Must be obtained from each utility</li> <li>• Often based on outdated studies</li> <li>• Difficult to obtain for privacy reasons</li> </ul>
<i>HUD Utility Schedule Model (HUSM)</i>	<ul style="list-style-type: none"> <li>• Based on national surveys of energy consumption</li> <li>• Uses a correction factor for age of property, construction type, fuel end uses and basic HVAC characteristics</li> <li>• Based on approximately 20 years of housing data, including older housing stock</li> <li>• Difficult user interface, may result in miscalculations</li> </ul>
<i>Actual Consumption Method</i>	<ul style="list-style-type: none"> <li>• Obtained through a statistical analysis of residents’ actual utility consumption using historical billing data</li> <li>• Requires collection of resident bills, which is time consuming and an administrative burden</li> <li>• Often garners low participation, leading to concerns about sample size and allowance accuracy</li> <li>• Considers only 12 months of data, so long-term weather trends aren’t incorporated</li> </ul>
<i>Energy Consumption Model aka Engineered Allowance</i>	<ul style="list-style-type: none"> <li>• Third party conducts comprehensive engineering analysis of property-specific installed systems, building orientation, building materials, location, occupancy, air leakage and more</li> <li>• Creates an estimate of expected utility usage for a conserving household of modest means</li> <li>• Rewards investments in energy efficiency</li> <li>• Ambiguous regulatory language makes some states hesitant to adopt this methodology</li> <li>• Greater upfront cost than PHA or HUSM allowances</li> </ul>

**Table 1.** Summary of Utility Allowance Methodologies

## Striking a Balance with Utility Allowance Calculations

The problem with an overestimated allowance is twofold:

1. It reduces the incentive for residents to conserve because the allowance is greater than responsible use would require. So if it is more convenient and not more expensive to run appliances and HVAC systems more often than necessary, the resident is encouraged NOT to save energy, which creates an environmental burden.
2. An artificially high allowance deprives the property owner of rental revenue since the Affordable Total Housing Costs index is a combination of rent and utility allowance. A lower allowance would allow for a higher rent and still stay within the Total Housing Cost cap. The inability to access this revenue can jeopardize the financial sustainability of the property when margins are already tight, as they typically are in affordable housing. Further, it makes it harder for a responsible owner to invest in the property because the cash flow to justify and support the debt is not there.

While a reduced utility cost allowance may be good for the owner, it does need to be recognized that many residents may not see this as a financial benefit because the difference in utility cost can be used to increase their monthly rent.

Conversely, an underestimated utility cost allowance is also problematic. If an allowance is too low, residents don't have enough money to cover even conservative utility bills, forcing the low income family to pay more than 30 percent of their income for rent plus utilities.

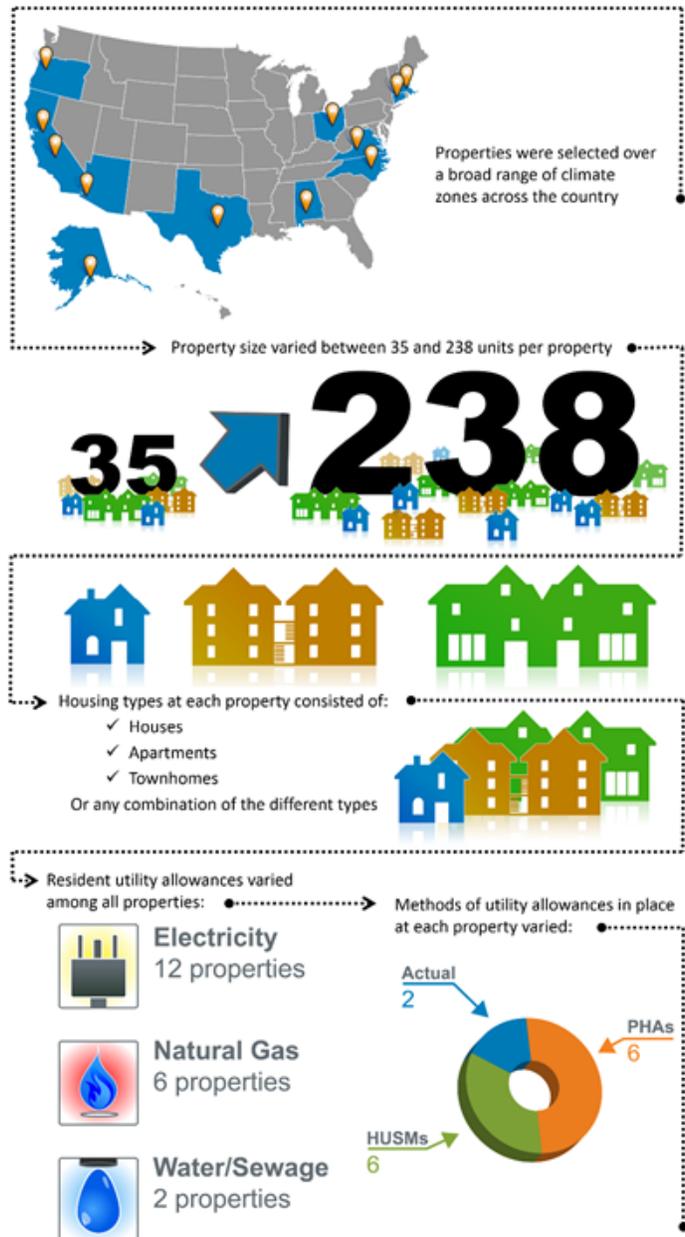
Therefore, it is imperative to strike a balance and calculate an accurate utility allowance – one that provides enough room in the budget for a low-to-moderate income household to cover rent and utilities but that still promotes investment in energy conservation by owners and supports sustainable rental income.

## Engineered Utility Allowances Generate Additional Revenue

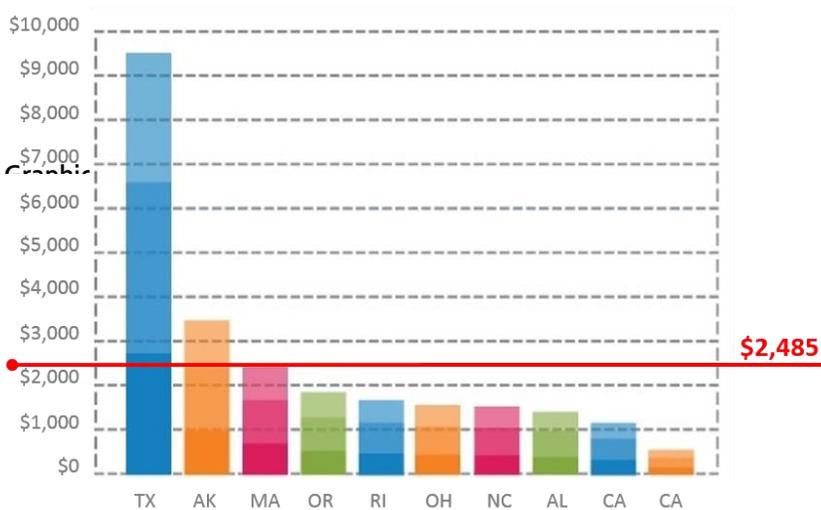
Engineered Utility Allowances (EUAs) are perhaps best equipped to strike the appropriate balance between resident and owner interests. A study conducted in late 2014 through early 2015 by 2rW

Consultants, Inc. has identified hidden opportunity costs associated with traditional methodologies when compared to modern EUAs.

The EUA study was conducted at 12 NeighborWorks America property sites across the United States (site locations noted in **Graphic 1**). The study evaluated EUAs across a broad spectrum of properties with varying characteristics such as number of units, building type(s), subsidized utilities and current Utility Allowance (UA) method.



**Graphic 1.** Summary of Property Characteristics



**Graphic 2.** Projected Monthly Increases in Revenue by Property

The results of the study indicate that 10 of the 12 properties could increase property revenues by reducing utility allowances to the level established by the engineered allowance calculation study in the first year regardless of the size of the property, geographic location, type of housing structure, type of subsidized utilities or current UA method utilized. The average annual projected revenue increase for these 10 properties generated by switching to an EUA methodology is \$29,815. This figure translates to an average increase in monthly revenue of \$2,485 per property, shown in **Graphic 2**, or \$28.49 per unit per month. Additionally, even after factoring in the cost of switching to the EUA method, the average payback period to cover the cost of the engineered allowance calculation was just over two months. What makes these findings especially compelling is the accuracy of the EUA tool used in this study. As an example, CHP owns and manages one of the two properties referenced in the study that did not result in increased revenues. This property pays for all resident utility costs, so historical utility records were available to compare actual data to the projected outcomes estimated by the EUA tool. The projected utility allowances for the property were 104.27 percent of what was actually consumed at the property. In this instance, the EUA method overestimated the actual consumption by only \$1.57 per unit per month.

This comparison of the EUA projections to the performance of a property that pays the true cost of utilities for their residents demonstrates the accuracy of the EUA tool used for this study.

Of the 12 properties participating in this study, ten properties have provided their feedback on the impact of the EUA study. Nine properties confirmed they already have or are in the process of switching over to the EUA calculation method. In addition, all nine properties have confirmed they intend to expand the use of the EUA calculation method to additional properties in their portfolios

The results of the study indicate that 10 of the 12 properties could increase property revenues by reducing utility allowances to the level established by the engineered allowance calculation study in the first year regardless of the size of the property, geographic location, type of housing structure, type of subsidized

based on the outcome of their pilot programs. One property reported they have not followed through with the EUA method due to a change in management since the study but indicated that new management would evaluate the study again.

## Considerations for Engineered Utility Allowances

Before exploring engineered utility allowances for a particular site, it is important to determine the following information:

- Is the site a strictly LIHTC property? (many HUD programs now require actual consumption allowances)
- Is the site located in a state that allows an EUA methodology?
- Is the site at or close to maximum rent?
- Does the site incorporate energy-efficient building features or appliances?
- Is the site newly constructed or recently renovated? (within the last 20 years)

Market and mission considerations will also impact a property owner's ability to increase effective rent by decreasing utility allowances. For instance, in strong housing markets such as Boston, the full reduction in utility allowance could be converted to rent, but in weaker markets where properties are not at maximum rent, revenue increases based on EUA changes may be more difficult to achieve. At the Texas property, for example, Foundation Communities found that their units serving residents with 30 percent and 50 percent Area Median Income (AMI) were at maximum rent and could benefit from the EUA, while the market for residences serving people with 60 percent of AMI was softer.

Once the conditions listed above have been studied and a property owner decides to move forward with an EUA, there are a few considerations for choosing the right EUA tool. First, confirm the EUA tool is compliant with all IRS and state Housing Finance Agency (HFA) standards; compliance failures can result in loss of the tax credit. Next, seek out a highly -accurate EUA tool with a proven track record. Accuracy of the tool is paramount for realizing any increase in revenue and to avoid underestimated utility allowances. Finally, understand the upfront and ongoing costs of using the tool and how implementation of the EUA will impact the property owners' return on investment.

## Education is key to success in achieving energy efficiency targets

It is important to remember that if resident energy consumption exceeds the utility allowances, residents effectively experience increases in their total utility costs. The problem is exacerbated if property owners have reduced the utility allowance and increased the rent to improve revenue. This possibility underscores the importance of resident energy education programs. Such programs help reduce the risk of residents using energy in excess of the EUA-projected consumption. But rather than have each property develop their own resident engagement program, some utility allowance providers like 2rw have incorporated such education programs into their EUA services. These programs empower residents by providing them with the knowledge and resources they need to learn how to conserve energy and further lower their utility bills that have already been reduced by the use of energy-efficient features.

All the participating groups reported that they did not have – and did not expect – resident resistance to appropriate lowering of the utility allowance. Key to this acceptance is the fact that all groups had strong outreach and education programs to explain the benefits and the fairness of the program to the residents. As one owner said, “Residents are accustomed to getting everything from tips to reduce usage to having utility data requested.” All the groups provided far more information and training than the minimum ‘postings’ of changes that are required by governing jurisdictions. For example, at Foundation Communities in Austin, Texas, we learned that thirty residents participated in energy monitoring programs, students attended learning center programs on environmental education and some residents participated in energy and water saving classes.

Educational programs offer specific recommendations for no-cost energy-saving actions in an engaging online platform with educational materials, entertainment resources and downloadable grassroots communication tools. The intention is to turn actionable items into common practices and, eventually, continued behavior. Engaging with residents on this level will ideally deepen a sense of community and improve the overall resident experience. And, in the context of utility allowances, such educational programs ensure that residents are not overwhelmed by any decrease in their UA; rather, they are empowered to take control of their own energy usage and save money in the process.

## Unintended Consequences of Maintaining the Status Quo

Property managers often find it tempting to stick with their existing UA methodology. Those properties that have relied on PHA or HUSM schedules in the past may continue to use them for reasons of simplicity, familiarity and low upfront costs. Owners may also be unaware of the potential of EUAs or may have been exposed to less accurate and less effective EUAs in the past. Other owners may be familiar with EUAs but are unsettled by the upfront costs when compared to the HUD schedules that carry little upfront cost to the property owners.

One important factor to consider when exploring alternative utility allowances is the cost of inaction. If a property has already made building or appliance upgrades resulting in reductions in energy consumption, the current allowance is unlikely to capture the savings achieved by those investments.

Capturing these missed revenues not only increases operational cash flow, which helps keep affordable housing projects functioning, it also increases the value of the property. The equity and positive cash flow provide the owner with increased security to borrow against for additional reinvestment opportunities such as building upgrades and resident services.

Additionally, EUAs incentivize property management groups to adopt energy efficiency upgrades and to encourage residents to practice energy conserving behavior in order to realize additional revenue. Tenants also benefit from owner investments in energy and green enhancements, which often result in improved comfort, health and safety for residents. By improving the living experience of tenants, the property owners reduce the likelihood of high resident turnover and its associated costs.

The opportunity cost of maintaining the status quo can be high for affordable housing properties. The ten properties analyzed in the 2rw study have projected five-year revenue increases estimated from \$25,080 up to \$566,760, with an average of \$149,076, due to switching to an EUA. Additional economic findings are outlined in **Table 2**.

Participants were asked what they planned to do with additional cash flow resulting from lower utility allowances. Responses included:

- Offsetting unexpected expenses elsewhere.
- Ongoing investment in efficient furnaces and appliances.

- Solar arrays to support resident utilities.
- Maintaining lower affordable rents.
- Support of green programming.

It is clear that while it is possible to use adjusted utility allowances to improve the profitability of the owner, the not-for-profit owners in the NeighborWorks network are using this resource to enhance the sustainability of properties and housing affordability.

### **Additional Benefits**

There are additional benefits to using EUAs that are particularly compelling for new and pre-construction properties. Aside from creating an allowance tailored to the actual construction of the property, which creates a more accurate allowance, EUAs also generate more favorable pre-construction financing options. Because rental incomes are likely to be higher with an EUA, property owners can secure additional funding prior to project construction.

An EUA can also be a helpful tool in capital improvement planning. For properties interested in exploring building renovations and appliance upgrades that may result in reduced energy consumption, EUA tools can model the various improvements a property may want to explore. These projections offer insight into whether it makes more financial sense for a property to, for instance, install additional attic insulation or replace old refrigerators with ENERGY STAR-certified models. This capability can help simplify the otherwise complex capital improvement planning process into simple dollars-and-cents language.

---

## Frequently Asked Questions (FAQs)

### ***How much does the engineering study cost?***

The average cost of the engineering study for the twelve pilot properties reviewed in this report was \$3,244. Based on the average projected increase in property revenue, the average simple payback for the study was slightly over two months. 2rw reports that over 90 percent of the time, the setup costs are recaptured within the first year when using an EUA.

### ***Are EUAs guaranteed to result in increased property revenue?***

There is no guarantee that the EUA method will result in increased property revenue. However, based on 2rw's record of over 200 projects completed, more than 90 percent have resulted in increased property revenue. In most cases, failure to gain revenue increases is due to the property not being particularly energy-efficient. The more efficiency measures that have already been implemented at a property, the more likely it is the property will see a reduced utility allowance and subsequent increases in property revenue.

### ***How invasive is the engineering study?***

If a property is unable to provide their as-built site drawings, engineers will need access to one unit of each floorplan or unit type. Engineers will not need to access every unit. Unit assessments take approximately 15-20 minutes each and can be performed in unoccupied units so no residents are disturbed.

### ***How will switching to an EUA method impact staff?***

At most, the property manager or maintenance technician may need to spend two to three hours assisting with completing documentation and helping the engineer during the site visit. The majority of the work is then completed by the engineering team. The compliance manager is only required to submit the completed utility allowances and technical documentation to the appropriate regulator.

### ***How will switching to an EUA method impact residents?***

With a strong program of resident energy behavior training, residents will remain largely unaffected. Residents will see a drop in their utility allowance and an increase in their rent payment; however, all properties contacted through this study have reported no negative responses nor do they anticipate negative responses from their residents as a result of these changes.

---

#### **Information Contributed By:**

Chase Counts, Community Housing Partners  
Harold Nassau, NeighborWorks America  
Emmanuel Hales, Zappling (a division of 2rw)  
Anna Joyce Gayle Henry, Zappling (a division of 2rw)  
Chrystal Strickler, Community Housing Partners

#### **Graphics Developed By:**

Van Garnett, Community Housing Partners  
Jackie Harder, Community Housing Partners