

ENTERPRISE GREEN COMMUNITIES

UTILITY ALLOWANCE OPTIONS FOR INVESTMENTS IN ENERGY EFFICIENCY: RESOURCE GUIDE



For New Construction
and Rehabilitated
Affordable Housing

May 2011



About Enterprise Green Communities

Enterprise Green Communities is the first national green building program focused entirely on affordable housing. Launched by Enterprise in fall 2004, Green Communities is designed to help developers, investors, builders and policymakers make the transition to a greener future for affordable housing. Visit www.greencommunitiesonline.org

About Enterprise

Enterprise is a leading provider of the development capital and expertise it takes to create decent, affordable homes and rebuild communities. For nearly 30 years, Enterprise has introduced neighborhood solutions through public-private partnerships with financial institutions, governments, community organizations and others that share our vision. Enterprise has raised and invested more than \$10.6 billion in equity, grants and loans to help build or preserve more than 270,000 affordable rental and for-sale homes to create vital communities. Enterprise is currently investing in communities at a rate of \$1 billion a year. Visit www.enterprisecommunity.org and www.enterprisecommunity.com to learn more about Enterprise's efforts to build communities and opportunity.

Acknowledgments

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About HMG

The Heschong Mahone Group, Inc. (HMG) provides professional consulting services in the field of building energy efficiency. HMG specializes in building design, construction technology, policy development and program design to make buildings more energy efficient. The diverse backgrounds of HMG staff — in evaluation, architecture, engineering, economics, building surveying, technical writing and project management — has led to varied project work for major utilities, government agencies, nonprofit organizations, and industry. HMG designed and implemented the first multi-family new construction and the first comprehensive retrofit programs in the state of California, and continues to evolve programs and policies to best serve the market. Through its unique programs, HMG provides technical expertise to populations of buildings to achieve deeper energy savings. In the policy arena, HMG has assisted many California Housing Authorities in developing and implementing Energy Efficiency-Based Utility Allowance schedules, participates on local, state, and national forums to advance policies to encourage and reward investments in energy efficiency in affordable housing.



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FOREWORD

Over the past six years, Enterprise Community Partners has focused on bringing the benefits of green building to the affordable housing sector, including an effort to examine the green opportunities for both new and existing housing stock. We have been busy proving the health, economic and environmental benefits from green design, construction and operations. One of the challenges that immediately surfaces as we share our evaluation results and discuss the reasons for going green is the concept of “split incentives.” This generally means that the incentive to integrate green measures into a project is split between the developer who pays the first costs of designing and constructing the green building, and the owner responsible for the long-term operating and maintenance costs. In affordable multifamily buildings, the benefits of green are often split between the tenants and the building owner, with federal housing regulations capping the gross rent a tenant is expected to pay each month for the combination of rent and utilities.

Enterprise currently supports developers to cost-effectively integrate green building features into their projects so that the first costs are minimized. Developers often want to achieve deeper results and employ measures that are cost effective over a building’s lifecycle but may have a higher first cost. Calculating a utility allowance that reflects the building’s energy efficiency can reinforce the decision to include measures that may have a higher first cost but will attain long-term benefits in lower utility costs, lower carbon emissions and lower maintenance or replacement costs. A lower utility allowance provides owners the opportunity to collect higher rents while tenants’ total gross rent remains unchanged. Tenants also benefit from living in a more energy efficient and comfortable apartment. Through tenant engagement, residents can also learn how to properly maintain their homes and may benefit from additional utility savings as well as a healthier living environment.

In 2008, the IRS issued an amendment to the utility allowances regulations to provide new options for estimating tenant utility costs for Low-Income Housing Tax Credit Properties. Enterprise worked with the Heschong Mahone Group to create the following guidebook to help developers, owners, housing authorities, and housing finance agencies engage in exploring utility allowance calculation options that may help overcome some of the split incentive challenges. Working through the issue of split incentives is critical in finding ways to bring the benefits of energy efficiency, water conservation, and healthy living environments to all residents and long-term owners of affordable housing. We hope that you find this guidebook useful in your work, and we welcome your feedback.



DANA BOURLAND

VICE PRESIDENT, GREEN INITIATIVES
ENTERPRISE COMMUNITY PARTNERS

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1. Purpose of This Resource

The purpose of this resource is to increase awareness of affordable housing developers, building owners, housing authorities (PHA), and housing finance authorities (HFA) about adopting, establishing, and offering utility allowance options supportive of energy-efficiency investments in new construction and rehabilitation. The advent of options to address energy efficiency in utility allowances stems from assertions that:

- PHA rates have typically been higher than actual usage, because they do not take into account the energy efficiency of newly constructed or rehabilitated properties.
- Estimates from the local utility company have become increasingly difficult to obtain.
- By using one standard utility allowance schedule for all buildings (regardless of energy upgrade investments), there is no incentive for building owners to install energy-efficiency measures.

In addressing the issue of utility allowances that reflect investments in energy efficiency, this resource includes the following objectives:

- To increase the awareness of utility allowance options that reflect energy efficiency among PHAs, HFAs, building owners and developers.
- To outline the options for implementing utility allowance that account for energy efficiency.
- To outline the methodologies used to date for developing utility allowances that account for energy efficiency.
- To summarize the rules governing (and allowing) utility allowances.
- To summarize efforts to date in terms of developing and implementing utility allowances that reflect energy efficiency.
- To provide case studies of the impact of a utility allowance that account for energy efficiency.
- To provide a list of resources and experts in developing energy-efficiency utility allowances.

2

2. Overview of Utility Allowances

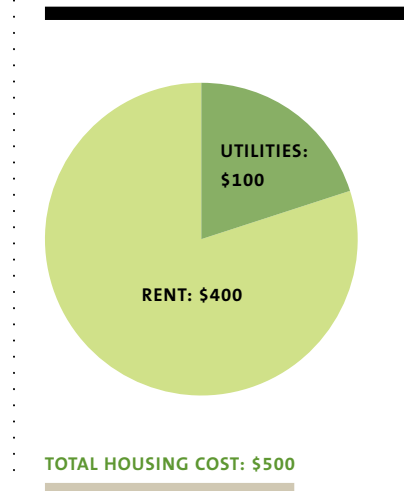
This section provides an overview of the premise of utility allowances, Standard Utility Allowances (SUA), and utility allowance options that reflect investments in energy efficiency [e.g., Energy Efficiency-Based Utility Allowances (EEBUA) and Project-Specific Utility Allowances].

2.1 THE PREMISE OF UTILITY ALLOWANCES

The U.S. Department of Housing and Urban Development (HUD) is tasked with keeping assisted housing affordable for lower-income households. To this end, federal housing regulations cap housing costs at 30% of the household’s adjusted monthly income.¹ HUD has defined the housing burden (or “gross rent”) as the total amount that tenants in affordable housing are expected to pay each month for the combination of rent and utilities. The amount that the household is expected to pay for utilities is called the “utility allowance.” To estimate utility costs, each local public housing agency (PHA) is tasked with determining a utility allowance. Utility allowances cover electricity, natural gas, propane, fuel oil, wood or coal, and water and sewage service, as well as garbage collection. The functions, or energy end-uses, covered by an allowance may include space heating, water heating, cooling, refrigeration, lighting, or appliances. Utility allowances can range from small to large depending on the housing authority, the number of utilities, end-uses covered, climate, utility rates, and dwelling unit and/or household size.

Because the housing burden includes both rent and utilities, the rent that property owners receive is determined by the difference between the total housing burden and the estimated utility costs. For example, in Figure 1 below, if the housing burden for a two-bedroom unit is calculated at \$500, and the utility allowance is determined to be \$100, the rent can be no more than \$400.

FIGURE 1.
 TOTAL HOUSING COST = RENT + UTILITIES



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OVERVIEW OF UTILITY ALLOWANCES (CONTINUED)

At first glance, it may seem that overestimating the utility allowance would be advantageous, because the tenants will save money. However, rent is the income source for the building owner. Consequently, the higher the rent, the more finances the building owner or developer has available to create additional affordable housing or make capital improvements (e.g., energy-efficiency upgrades, safety or aesthetic improvements) to their existing affordable housing stock, all of which benefits the tenants. As will be explained later in this document, a utility allowance that is reduced to reflect energy-efficiency measures will benefit the tenants in other ways, through a small amount of savings, and from additional benefits of living in an energy-efficient unit (e.g., increased comfort).

2.2 UTILITY ALLOWANCE APPLICABILITY

The utility allowance schedule applies to properties with tenant-paid utilities. Whether a utility allowance is applicable to a household for a given utility service depends on two factors:

- **Type of federal assistance the household receives.** A project that is:
 - Owned by a local Public Housing Authority, known as “public housing.” The PHA sets the utility allowance.
 - Developed under the Low-Income Housing Tax Credit (LIHTC) program is subject to its state Housing Financing Authority (HFA). The HFA determines what utility allowance applies.
 - A Section 8 property (or other HUD-assisted property). HUD allows one to use a utility allowance developed by the PHA, one estimated by the local utility company (an average of existing similar local properties), or one developed in accordance with other HUD regulations.
- **Utility metering configurations.** Utilities can be metered in one of three ways: master-metered, sub-metered, and individually metered. Allowances are provided for sub-metered, individually metered, or mixed-metered utilities, but not for master-metered utilities.
 - *Master-metered.* Because the building owner pays the utilities for master-metered properties, there is no utility allowance.
 - *Sub-metered.* For buildings that are sub-metered. In some cases, the building owner pays the utility company, but hires an independent company to measure each tenant’s use and bill them accordingly. The building owner provides each household with a maximum utility allowance. If the household exceeds this allowance, a surcharge is applied.
 - *Individually metered.* For properties that are individually metered, the tenant has a separate account with the utility company and pays the bill directly.
 - *Mixed-metered.* For properties that have different metering systems for different utilities, the utility allowance is applied for the utilities that are paid by the residents. For example, electricity might be individually metered, gas master-metered, and water sub-metered.

OVERVIEW OF UTILITY ALLOWANCES (CONTINUED)

2.3 ESTABLISHING THE STANDARD UTILITY ALLOWANCE

For properties over which the Internal Revenue Service (IRS) has regulatory authority, the IRS allows the following approaches for obtaining utility allowances:

- The local PHA sets the Housing Choice Voucher (HCV or Section 8) utility allowances
- The local utility company provides an estimate
- An LIHTC authority estimate
- An engineering/consumption model approved by the state's HFA
- HUD's Utility Schedule Model

2.3.1 UTILITY ALLOWANCES ESTABLISHED BY THE PUBLIC HOUSING AUTHORITY

The PHA established standard utility allowance is close to a “one size fits all” approach for determining the utility allowance for affordable housing units. The PHA calculates the utility allowance schedules as an average across all buildings within its portfolio, discriminating between apartments with different numbers of bedrooms, and generally discriminating between those with different fuels for some of the end-uses (e.g., apartments with gas water heating generally have a lower allowance than those with electric resistance water heating). Portfolios often include many old buildings. PHAS' development of utility allowance (UA) schedules have also tended to be based on static, older building stock data. These factors have led to discrepancies in estimated energy use between older properties built before there were building energy-efficiency standards anywhere, and newer LIHTC projects that are generally more efficient even than current state requirements. This mismatch can result in (a) utility allowances much higher than actual consumption, (b) rental income for owners of newly constructed properties that are lower than they should get, and (c) a powerful disincentive for owners of affordable housing to make investments in energy efficiency. When the UA is higher than it should be, the tenant keeps the difference between the UA estimate and their actual utility bills. While this may seem to be a good thing for low-income tenants, it endangers the financial viability of the property and reduces the ability of owners to provide services or invest in capital improvements.² While the PHA is required to update the SUA if there is a 10% increase in utility rates, developers are at the mercy of volatile utility costs and stagnant income limits in forecasting a property's cash flow.

HUD has traditionally allowed PHAs two methodologies for calculating the utility allowance schedule they develop for their own use:

- **Engineering-Based Methodology.** The PHA uses engineering calculations and technical data to estimate the utility requirements for each end-use, and then sum these across all end-uses for the total utility allowance.

Advantages:

- Allowances do not need to be recalculated every year. Allowances should be recalculated periodically to account for:
 - Gradual changes in equipment and appliance use and efficiency
 - Major changes made to the developments
- The PHA does not need to obtain actual billing data from its residents to use this methodology.

2

OVERVIEW OF UTILITY ALLOWANCES (CONTINUED)

Disadvantages:

- PHAs must typically hire a qualified professional to calculate utility allowances using the engineering methodology or must have technical information available, such as heat loss calculations, efficiency of appliances and equipment, and weather data.
- **Billing Data-Based Methodology.**³ The PHA uses actual utility data on past consumption by residents, based on billing records. The data must be collected either using a 3-year rolling average, or using one or more years of data that is adjusted based on the weather.

Advantages:

- Based on actual consumption and may be simpler to calculate

Disadvantages:

- Often very difficult to obtain tenants' actual utility data
- Difficult for a lay person to adjust correctly for weather
- Amount and quality of data required on the full stock of applicable buildings in order to make the estimate even marginally accurate, is incredibly expensive⁴
- Billing data must be collected every year (if the rolling average method is used).

Under both methodologies, the utility allowance increases with the number of bedrooms. For example, the utility allowance for a two-bedroom unit is lower than for a three-bedroom unit. The utility allowance is also generally broken into energy end-uses (e.g., space heating, water heating, cooking) and fuel sources, (e.g., gas or electricity), as well as other utilities (e.g., water, trash). The utility allowance generally varies by type of fuel used for each end-use (e.g., cooking with natural gas, propane, or electricity).

The utility allowance for each project will include only the utilities paid by the tenant. For example, if the building owner will pay for water and trash, the costs of these utilities are removed from the utility allowance. Phone, cable television, and internet are excluded from utility allowance calculations by IRS regulations.

For detailed information about calculating standard utility allowances, please refer to *U.S. Department of Housing and Urban Development Utility Allowance Guidebook*.⁵

2.3.2 UTILITY ALLOWANCES ESTABLISHED BY UTILITY ESTIMATES

Property owners can calculate utility allowances using estimates obtained from the local utility company. Any utility company furnishing an estimate must offer utility services to the building. However, the utility company estimate is difficult to obtain for a couple reasons. First, this is not the utilities' core business and they are concerned with customer confidentiality when providing this level of customer information. Second, most multifamily buildings are served by several utility companies: one for electricity, another for natural gas, and yet another for water and sewer services. The property owner would need to get all of the utility companies to provide the estimates. Third, it is even harder for a utility company than it is for a PHA to ensure that their data are separated by the criteria important to a utility allowance analysis. At the most basic level, utilities typically do not collect data on whether a specific address is a two, three, or four-bedroom apartment. Conversely, while the PHA may know the apartment type data very well, they seldom have adequate records on which apartments have gas cooking, gas water heating, and electric (heat pump) heating and cooling, versus those that have electric cooking, electric water heating, gas heating and no air conditioning.

3. Introduction to Energy-Efficient Utility Allowances

Through the aforementioned methodologies, the PHA (or other party) estimates utility costs for a ‘reasonably conservative’ household. This takes into consideration behavior in energy use, but does not account for the physical condition of the building, investments in energy efficiency for newly constructed projects that meet, and oftentimes exceed, state energy codes or for investments in energy efficiency in retrofitting or rehabilitating older properties. In these cases, not only will these investments lower utility costs for tenants, but also improve the comfort and potentially the indoor air quality. For all of the traditional methodologies, the utility allowance is not a good predictor of the energy use of the actual unit. In other words, the utility allowance for a two-bedroom unit that is poorly sealed and has inefficient equipment is the same as the utility allowance for a two-bedroom unit that is tightly sealed and has efficient equipment. This means that the rent is also the same for the efficient and inefficient units.

3.1 UTILITY ALLOWANCES THAT REFLECT ENERGY-EFFICIENCY INVESTMENTS

Because traditional utility allowance schedules do not differentiate between energy-efficient and typical units, building owners and developers have no incentive for building energy-efficient units or retrofitting existing housing stock. Conversely, a lower utility allowance designed to reflect investments in energy efficiency acts as an incentive for upgrades and deeper energy savings, help to overcome split incentives, and contribute to the financial viability of new projects.

THE “SPLIT INCENTIVE”

The “split incentive” is a common barrier to energy-efficiency investments in multifamily housing. Two sides of the split are:

- When the landlord provides energy-using appliances and systems (e.g. refrigerators, water heating, air conditioning, lighting systems), but the tenant pays the electricity bill. There is little incentive for the landlord to choose the most energy-efficient appliance.
- Renters don’t, or can’t afford to, make investments in properties they don’t own.

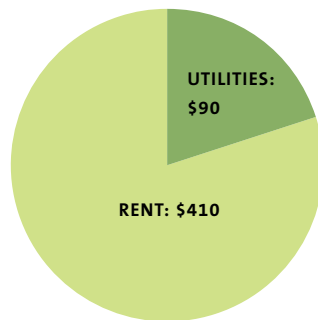
The PHA calculates the utility allowance schedules as an average across all buildings within its portfolio. Portfolios often include many old buildings. It is estimated that in California for example, the average age of buildings in the state’s PHAS’ stock is 28 years old. The calculations have also tended to be based on fairly static building stock data. Consequently, Standard Utility Allowances have historically over-predicted tenants’ energy costs. This is particularly true for units in newer buildings or energy-efficient buildings. A more accurate utility allowance would allow building owners and developers to charge higher rents, without violating the public policy intent of the IRS regulations that the total housing costs for the tenants should not exceed 30% of monthly income. One benefit of a lower utility allowance is an increase in the property’s cash flow, or monthly net.

For example, if the housing cost for a two-bedroom apartment is \$500 and the standard utility allowance is \$100, then the building owner can collect \$400 in rent. If the project invests in energy

INTRODUCTION TO ENERGY-EFFICIENT UTILITY ALLOWANCES (CONTINUED)

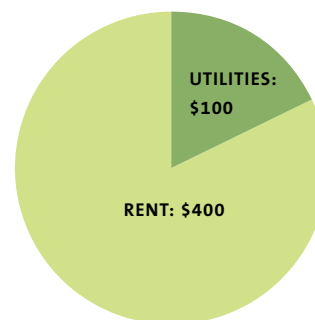
efficiency and the projected utility costs are \$90, then the building owner can collect \$410 in rent without impacting the tenants' total housing cost. This is depicted in Figures 2 and 3, below.

FIGURE 2.
ENERGY-EFFICIENT UTILITY ALLOWANCE



TOTAL HOUSING COST: \$500

FIGURE 3.
STANDARD UTILITY ALLOWANCE



TOTAL HOUSING COST: \$500

3.2 ENERGY-EFFICIENT UTILITY ALLOWANCE OPTIONS

Energy-efficiency utility allowances have recently been created in response to the need to obtain more accurate consumption estimates in energy-efficient buildings. There are several varieties of energy-efficient utility allowances, including the following two major types:

3.2.1 ENERGY CONSUMPTION MODEL-BASED UTILITY ALLOWANCE (ENGINEERING)

A 2008 IRS ruling now allows projects to use an Energy Consumption (engineering) Model (ECM) to calculate a project-specific utility allowance. The ruling grants LIHTC authorities (HFAs) the option of allowing projects to employ an ECM that estimates a project-specific utility allowance. For example, a project that is 50% more efficient than code would have a lower utility allowance than a building that is 20% more efficient than code. For a project to use this approach, its HFA must have adopted the IRS ruling.

3.2.2 ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (EEBUA)

PHAs can choose to allow properties with proven energy-efficiency investments to adopt lower utility allowances. This option is based on an SUA, but represents the average energy savings of projects that achieve a minimum verifiable level of efficiency. The EEBUA schedule reflects the climate zone and building characteristics in that PHA's housing stock. Similar to an SUA, the EEBUA schedule is the same for any qualifying energy-efficient building in the PHA's jurisdiction. For example, a project that is 50% more efficient than code follows the same EEBUA schedule as a project that is 20% more efficient than code. Note that for both the buildings, the EEBUA is still more accurate than the SUA based on the PHA's existing, old housing stock.

INTRODUCTION TO ENERGY-EFFICIENT UTILITY ALLOWANCES (CONTINUED)

3.3 KEY DIFFERENCES BETWEEN ECM AND EEBUA

These new options differ in several ways. The Energy Consumption Model (ECM) is governed by the HFA and allows a project-specific utility allowance. The ECM is a utility allowance that calculates a specific project by a qualified professional, based on the energy performance of that particular project. The HFA must approve the ECM approach, specify in regulations what kinds of projects can use it, and adopt criteria by which its use is approved. For now, only LIHTC-financed projects can use it.

The Energy Efficiency-Based Utility Allowance (EEBUA) schedule is adopted by the PHA and works much like the SUA. The EEBUA is a lower utility allowance, based on estimating the average energy consumption of energy-efficient buildings located within the PHA's jurisdiction. An EEBUA is an alternative utility schedule that can be used by projects that meet minimum energy performance criteria (e.g., 15% improvement over code for new construction, or 20% improvement over existing conditions for rehab projects). The EEBUA should only be used for units that verifiably meet a minimum energy-efficiency standard, as defined by the PHA; other properties should use the SUA.

How to determine which option that a project can use is illustrated in the decision tree in Section 6.1.

3.4 BENEFITS OF AN ECM OR EEBUA**3.4.1 BENEFITS TO PUBLIC HOUSING AUTHORITIES**

Many HFAs and PHAs have interest in fostering a green, quality, comfortable, and financially viable housing stock. To that end, offering an ECM-based utility allowance (by the HFA) or an EEBUA (by the PHA) can contribute to:

- Improving projects' financial viability; utility allowances are lower and rents are higher, freeing up funds to build more affordable housing
- Better cash flow also increases a project's ability to repay financing and debt, making the project more stable
- Higher quality energy-efficiency construction and equipment lead to a higher quality affordable housing stock
- More comfortable homes for low-income tenants
- Meeting a jurisdiction's local energy goals
- A jurisdiction's sustainability, carbon reduction or green building goals
- Correcting artificially high utility allowances
- A potential collaboration with local utility energy-efficiency programs and state funded weatherization programs
- Fostering green job creation

3.4.2 BENEFITS TO PROPERTY OWNERS AND DEVELOPERS

The greatest benefit of an energy-efficient utility allowance to property owners and developers is the financial benefit. After all, if developers could not earn any return on their investments in energy efficiency, it would not be reasonable to expect them to make the investment.

INTRODUCTION TO ENERGY-EFFICIENT UTILITY ALLOWANCES (CONTINUED)

However, beyond the direct financial benefit, there are various other benefits to building owners and developers:

- Improving financial viability of a new, rehab, or refinanced project
- Overcomes the split incentives, whereby property owners have little or no incentive to invest in energy efficiency for units for which the tenants pay the utility bills
- Higher quality construction reduces maintenance costs and liability
- More comfortable homes reduce tenant complaints and call-backs
- Improving a project's cash flow and ability to service debt
- A reputation for proving quality, efficiency, green, and comfortable housing
- Meeting a jurisdiction's local energy code
- A jurisdiction's sustainability, carbon reduction or green building goals
- Correcting artificially high utility allowances
- Fostering green job creation

3.4.3 BENEFITS TO TENANTS

Tenants typically have no say in the level of investment in energy efficiency of their homes. Therefore, if an energy-efficient utility allowance encourages that investment, without increasing their total housing costs, tenants can benefit from:

- Slightly lower energy costs
- Better protection from utility price shocks and rate fluctuations
- Quality homes and efficient equipment (which is generally quieter, or more serviceable in other ways beside being more efficient)
- Construction of more affordable housing available
- More comfortable homes (less drafts enable homes to maintain desired temperature)
- Better indoor air quality from efficient measures
- To the extent that property owners use the increased cash flow to provide tenant services, tenants may benefit

3.4.4 HUD DEEMS USE OF EEBUA A SUCCESS STORY

The following article, entitled, "Success Story—Housing Authority of the City of Riverside," was taken from HUD's newsletter, the *Public Housing Energy Conservation Clearinghouse News*, March–April 2004:⁶

"Property owners and tenants alike are benefiting from an energy-efficient utility allowance schedule developed by the Housing Authority of the City of Riverside, Calif. The new allowance schedule encourages multifamily owners to increase the energy efficiency of their units. By doing so, owners can increase the value and marketability of their properties while reducing utility bills. And, taking lower subsidies into account, the potential cost savings to a housing authority can be substantial. There are advantages to residents, as well, including lower energy costs and increased comfort."

4

4. Energy Consumption Model

The Energy Consumption Model (ECM) provides the option of creating an energy-efficient utility allowance that is specific to each project. A building owner/developer hires a qualified professional to calculate a project-specific utility allowance, based on the energy-efficiency measures installed in the project. This means that utility allowances from the ECM will vary for each project that uses it, depending on the level of energy-efficiency achieved in the project and the specific measures used. A project that has the option of obtaining a utility allowance from an ECM instead of a standard utility allowance has a financial incentive to install energy-efficiency measures. Compared with an EEBUA (which is applied generically to all energy-efficient buildings in a PHA's jurisdiction), the ECM encourages projects to achieve greater energy efficiency than the minimum requirement, because the utility allowance is based on the specific project. For example, a project that is 50% more efficient than the baseline will have a significantly lower utility allowance than a project that is 20% more efficient than the baseline.

This new approach was made possible by an Internal Revenue Service ruling (“26 CFR Part 1 Section 42 Utility Allowance Update”), which took effect July 29, 2008. The ruling affects only projects that are financed with Low-Income Housing Tax Credits (LIHTC). In addition, each Housing Finance Agency (HFA), which administers the LIHTC funding, has the authority to adopt an ECM. The ECM is generally created using software that simulates the energy use of the building. This software takes into account the unit size, building orientation, insulation characteristics, window and door thermal characteristics, and equipment choice. Consequently, most HFAs that adopt the ruling have approved one or more energy modeling software packages that must be used.

This section presents:

- A summary of the IRS ruling
- A description of rules governing how the ECM is applied and implemented
- An example of how this model is applied in California
- Case studies illustrating the value of an ECM-based utility allowance compared with a standard utility allowance
- Sample methodology and forms and policies for developing and implementing the ECM

4.1 RULES GOVERNING THE USE OF AN ENERGY CONSUMPTION MODEL

This section provides a summary of the IRS ruling. An HFA that wishes to adopt the IRS ruling allowing projects to determine a project-specific utility allowance based on an ECM should read the full IRS ruling. This ruling includes rules for its application and is available here:

<http://edocket.access.gpo.gov/2008/pdf/E8-17268.pdf>

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ENERGY CONSUMPTION MODEL (CONTINUED)

4.1.1 SUMMARY OF IRS RULING

In 2008, the IRS issued an amendment to the utility allowances regulation [§ 1.42-10(a)(4)(ii)(E)] to provide new options for estimating tenant utility costs for Low-Income Housing Tax Credit properties.⁷ This ruling specifies that use of the new option is governed and administered by the state and local housing finance agencies that administer the tax credit. It permits a building owner to hire a qualified professional to calculate building-specific energy use using approved building simulation software. The estimate must be based on the specific characteristics (e.g., design, materials, equipment, and location) of the building and the local utility rates. Utility allowances are applied to all comparable units in the building. As defined by this ruling, using the “Energy Consumption Model,” the building owner is subject to the following special rules.

- The Energy Consumption Model must take into account specific factors including, but not limited to, unit size, building orientation, design and materials, mechanical systems, appliances, and characteristics of the building location.
- A properly licensed engineer or a qualified professional approved by the Agency that has jurisdiction over the building must conduct the analysis and prepare the utility estimates and must not be related to the owner, as defined by the rulings section 267(b) or 707(b).
- The building owner must furnish a copy of the estimates derived from the Energy Consumption Model to the Agency and make copies of the estimates available to all tenants in the building.
- The building owner must pay for all costs incurred in obtaining the utility estimates from the qualified professional and providing the estimates to the Agency and tenants.
- The building owner must review at least annually the basis on which the utility allowance has been established. The review must take into account any changes to the building such as energy conservation measures as well as changes in utility rates.
- The model must represent current building condition and current utility rates.

Section 42 also allows utility allowances for sub-metered buildings (as long as the billing is based on actual expense to the household and is limited to utility company rates paid for the building). However, master-metered buildings where utility costs are estimated based upon ratio utility billing systems (also known as RUBS) are not considered to be sub-metered and any resulting tenant payments would be considered as a part of the monthly rent.

Buildings in which any resident receives Rural Housing Service (RHS) rental assistance must use the applicable RHS utility allowances.

4.1.2 HOUSING FINANCE AGENCY ADOPTION AND IMPLEMENTATION STEPS

The IRS establishes the rules and regulations that govern the Low-Income Housing Tax Credit program. Within each state, the Housing Finance Agency (HFA) administers the LIHTC program. Consequently, the HFAs have a vested interest in improving the accuracy of utility allowance estimates on tax credit projects. The IRS regulations make the HFAs responsible for monitoring compliance with the tax credit program. The regulations also grant each HFA the option of adopting the ECM ruling. Thus, some HFAs have adopted the entire ruling, some have adopted only parts of the ruling, and some have not adopted it at all.

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ENERGY CONSUMPTION MODEL (CONTINUED)

The HFA governs and establishes the policies under which a property can utilize the ECM to calculate projected energy savings. The HFA must approve the model for use and under which conditions the model is applicable, as well as who is qualified to use the model. As such, the HFA must:

- Approve the ECM
- Ensure that the engineer is licensed to practice by the state
- Establish qualifications for professionals/engineers who can develop an ECM
 - Qualified professional cannot be related to building owner
- Govern changes in applicable utility allowance:
 - Use of the ECM is limited to the building’s consumption data for the 12-month period ending no earlier than 60 days prior to the beginning of the 90-day period under paragraph (c)(1) of this section, and utility rates used for the ECM must be no older than the rates in place 60 days prior to the beginning of the 90-day period under paragraph (c)(1) of this section. In the case of newly constructed or renovated buildings with less than 12 months of consumption data, the qualified professional may use consumption data for the 12-month period of units of similar size and construction in the geographic area in which the building containing the units is located.
 - A copy of the new utility allowance must be submitted; a copy of the estimates must be submitted to the HFA as well as made available to all tenants in the property.
 - A building owner is not required to review utility allowances, or implement new utility allowances, until the building has achieved 90% occupancy for a period of 90 consecutive days or the end of the first year of the credit period, whichever is earlier.
- Require an annual review of the basis on which utility allowances have been established and must update the applicable utility allowance in accordance with paragraph (c)(1) of this section. The review must take into account any changes to the building such as any energy conservation measures that affect energy consumption and changes in utility rates.

4.1.3 APPLICABILITY OF THE ENERGY CONSUMPTION MODEL

Currently, only projects that are financed with an LIHTC can use an ECM. This is because the use of an ECM was made possible by an Internal Revenue Service (IRS) ruling “26 CFR Part 1 Section 42 Utility Allowance Update”⁸, which has jurisdiction over LIHTC funding.

In addition, the project must be located in a state in which the HFA—which administers the LIHTC funding) has adopted the IRS ruling. Project teams can check with their local HFA branch to determine if they have adopted the ruling.

The ECM is a new approach—the IRS ruling took effect July 29, 2008. Consequently, some HFAs are still in the process of determining whether or not to adopt the ruling and allow ECMs.

ENERGY CONSUMPTION MODEL (CONTINUED)

4.1.4 ENERGY CONSUMPTION MODEL DESCRIPTION

Any HFA which adopts the ruling must have, or approve, an ECM. An ECM is a computer program that models the energy use of the particular building. The user inputs the specific information for the building, such as the unit sizes, building orientation, the efficiency of equipment and appliances, building location, and other factors that influence energy use. The software then predicts how much total energy (kWh and therms) that the particular building will use annually.

Note that the ECM is a prediction of energy use. The actual energy use will depend heavily on the behavior of the residents, as well as the particular weather that year. However, standard utility allowances pose the same problem—they are only a prediction of the energy use, not the actual energy use. The ECM should be a better predictor of energy use because it is based on project-specific information, rather than on a mix of buildings or generic prototypical buildings. According to the IRS ruling, the ECM must include the following inputs:

- Unit size
- Building orientation
- Design and materials
- Mechanical systems
- Appliances
- Characteristics of the building location

To ensure that the ECM includes all required elements, the HFA may require projects to use a specific tool to calculate the ECM. For example, in California, projects must use the California Utility Allowance Calculator (CUAC) to calculate an ECM. Alternatively, or in addition to the specific tool, the HFA may require that only certain types of energy modeling software be used (e.g., REMRATE, EnergyPro, MICROPAS, TREAT, EQuest, and others). The acceptable software may depend on whether the project is low rise (three stories or lower) or high rise. Project teams must check with their local HFA to determine the particular requirements.

The IRS also requires that the ECM must be calculated by someone that is not related to the building owner or developer and that is either:

- A licensed engineer, or
- A qualified professional approved by the HFA.

Each HFA decides what type of professional may calculate the ECM. As described in Section 1: Purpose of this Guidebook, a HERS rater, or other trained, accredited professional should verify that all energy-efficiency measures in the energy model are actually installed in the building.

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ENERGY CONSUMPTION MODEL (CONTINUED)

4.2 EXAMPLE OF AN ENERGY CONSUMPTION MODEL—CALIFORNIA

The California Tax Credit Allocation Committee (CTCAC), the HFA for California, adopted the IRS ruling to allow the use of the ECM. CTCAC's adoption of the ruling included several specific requirements:

- All projects must use a specific tool—the California Utility Allowance Calculator (CUAC)—to determine the utility allowance estimate.
- Only new construction projects can use an ECM. Retrofit projects may not use the ECM. Substantial rehabilitation projects may be allowed by the Executive Director on a case-by-case basis.
- The ECM must be calculated by someone that is 1) a California Association of Building Energy Consultants (CABEC) Certified Energy Plans Examiner (CEPE), **AND** 2) **EITHER** a licensed mechanical or electrical engineer, **OR** a Home Energy Rater (HERS Rater).

CTCAC partnered with the California Energy Commission (CEC) and the New Solar Home Partnership (NSHP) to guide development of a tool that projects must use to create the ECM. This tool is called the CUAC. It was developed by a contractor (KEMA) and approved for use by the CTCAC on Jan. 25, 2009.

The CUAC is currently an Access based tool.⁹ It prompts the user to enter information from the energy model, as well as information on lights, appliances, and renewable energy [e.g., photovoltaic (“solar”) panels, if they are present]. The CUAC then automatically calculates the electricity and natural gas usage of each unit in the building, applies the appropriate utility tariffs, and provides a sheet of utility allowances that is in a format similar to the HUD utility allowance form that is common in the industry.

Because the CUAC requires information obtained from the energy model, users must create the energy model before using the CUAC. As of Feb. 2010, only MICROPAS and Energy Pro have been approved by the CEC as acceptable software. If the project includes a photovoltaic (PV) system, the consultant must use the CEC NSHP PV calculator for predicting the electricity generated by the PV system. A full description of procedures that must be followed when building the energy model and using the CUAC is provided in the CUAC User Guide.¹⁰

The CUAC predicts the energy use for the units in the building. If tenants are required to pay additional utilities, such as water, trash, or sewer, the user inputs the data (flat fee or unitary rate). The CUAC will output these additional utilities.

More detailed guidance on developing an ECM is presented in Section 4.4: Sample Methodology for Developing an Energy Consumption Model.

ENERGY CONSUMPTION MODEL (CONTINUED)

4.3 PROJECT CASE STUDIES: FINANCIAL BENEFITS OF ENERGY CONSUMPTION MODEL-BASED UTILITY ALLOWANCE

The following project summaries provide examples of the financial benefits to the developer of using a utility allowance based on the ECM, instead of the (higher) standard utility allowance. Because both of these projects are in California, both used the CUAC.

**4.3.1 THE GARDENS ON GARFIELD**

DEVELOPER: Thomas Safran & Associates (www.tsahousing.com)

LOCATION: Glendale, Calif. (LA County)

CALIFORNIA CLIMATE ZONE: 9

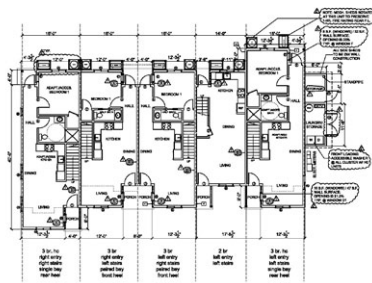
NUMBER OF UNITS: 30

ENERGY ACHIEVEMENT: Exceeded Title 24 by $\geq 16\%$

ENERGY-EFFICIENCY MEASURES INCLUDE: 1) ENERGY STAR appliances; 2) High efficacy lighting, and timers for lights in common areas; 3) Upgraded roof insulation (R-30); 4) Low-E* windows; Upgraded HVAC system (heat pump)

FINANCIAL BENEFITS OF CUAC: The standard utility allowance (UA) increased during the time that the project was constructed. This would have resulted in a gap in financing, if the developer had used the standard UA. Using the true UA determined with the CUAC, the developer was able to avoid losing \$90,000 in loans.

*Low-emissivity: Window glass is by nature highly emissive. To improve thermal efficiency (insulation properties), thin film coatings are applied during the manufacture of window glass.

**4.3.2 ASTER PLACE (In Development)**

DEVELOPER: The Danco Group of Companies (www.danco-group.com)

LOCATION: Eureka, Calif. (Humboldt County)

CALIFORNIA CLIMATE ZONE: 1

NUMBER OF UNITS: 56

ENERGY ACHIEVEMENT: Based on design, will exceed Title 24 by 30%

ENERGY-EFFICIENCY MEASURES WILL INCLUDE: 1) Upgraded insulation (R-22 in wall, R-49 in attic, R-5 slab); 2) Heat pump for space heating (HSPF = 12) and water heating (EF = 2.33); 3) ENERGY STAR appliances; 4) LED lighting, and Solatubes for daylighting on second floor

FINANCIAL BENEFITS OF CUAC: The CUAC-determined UA allows the developer to show an additional cash flow of \$520,000.

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ENERGY CONSUMPTION MODEL (CONTINUED)

4.4 SAMPLE METHODOLOGY FOR DEVELOPING AN ENERGY CONSUMPTION MODEL

The following summarizes the development of the ECM for California—the CUAC—and provides links for further information.

4.4.1 CALIFORNIA UTILITY ALLOWANCE CALCULATOR (CUAC)—TOOL AND METHODOLOGY

The CUAC translates the output of an energy model (in kWh and therms) into predicted utility bills (in dollars). It also provides guidelines to the user in terms of which values should be used from the energy simulation model and assumptions that should be made when developing the model. This tool could be used as an example for other HFA that wish to adopt the IRS ruling and allow projects to determine an ECM-based utility allowance.

The CUAC and the associated user guide are available here: www.gosolarcalifornia.org/affordable/cuac/index.php

The CUAC's development was sponsored by the California Energy Commission (CEC) and other organizations. Although there is no publicly available document describing how the tool was developed, a representative from the CEC offered several suggestions for developing a similar calculator in other states.¹¹

- Different software packages give different outputs for the same building (because of differences in assumptions, measures included, and other factors). The HFA should specify the allowable software(s) that can be used for building energy modeling, which will provide inputs for the calculator.
- Once the software(s) has been chosen for approval, the HFA should specify any modeling guidelines (e.g., assumptions, default values) that should be used. (This may require hiring a consulting company that is familiar with the modeling software.)
- The tool should reflect the utility tariff structure. For example, if there are five tiers of electricity rates, the tool should include calculations for each tier.
- If more than one utility serves the state, utilities should submit tariffs in a clear and consistent format. For example, the HFA should specify whether the transmission and commodity charges should be included or excluded in the tariffs.
- The calculator should be an online tool that does not allow the user to make changes once official documents have been printed for submittal to the HFA, and that allows an auditor to download project information.
- The calculator should be updated as energy tariffs change.

4.5 SAMPLE HFA POLICIES AND FORMS

Following is an example of a California HFA policy, guidance, and submission requirements as well as links to policies from other states, and links to policies and procedures for other states that have adopted the IRS ruling.

ENERGY CONSUMPTION MODEL (CONTINUED)

4.5.1 SAMPLE HFA GUIDANCE DOCUMENT—CALIFORNIA

The following is a sample guidance document issued by the California HFA (the TCAC) on using the ECM-based utility allowance approach. This document can be found at www.treasurer.ca.gov/ctcac/2009/cuac/guidance.pdf.

STATE OF CALIFORNIA

CALIFORNIA TAX CREDIT ALLOCATION COMMITTEE

915 CAPITOL MALL, ROOM 485
P.O. BOX 942809
SACRAMENTO, CA 94209-0001
TELEPHONE: (916) 654-6340
FAX: (916) 654-6033

William J. Pavão
Executive Director

**MEMBERS:**

Bill Lockyer, Chair
State Treasurer

Michael C. Genest, Director
Department of Finance

John Chiang
State Controller

December 18, 2009

TO: Housing Credit Property Owners and Managers

FROM: The California Tax Credit Allocation Committee (CTCAC)

RE: Update on CUAC Calculator and Guidance for Tax Credit Project Owners

Dear Housing Credit Participant:

This memorandum notifies CTCAC program users that the California Energy Commission (CEC) has updated the California Utility Allowance Calculator (CUAC), answers some frequently asked questions regarding using the calculator for newly constructed tax credit developments; and describes CTCAC's related submission requirements.

Update to CUAC

The updated version of the CUAC can be downloaded from (www.gosolarcalifornia.org/affordable_housing/cuac.html).

The revised version of the CUAC implements the California Public Utilities Commission Virtual Net Metering (VNM) decision which can be viewed at the below link:

(www.gosolarcalifornia.org/affordable_housing/virtual_net_metering.html).

The new distribution calculation within the CUAC calculator uses a series of weightings reflecting the relationship between affordable Low-Income Housing Tax Credit rents, by unit size, throughout California.

The CEC has indicated that while VNM is available to developers with projects in areas served by the Investor Owned Utilities (IOUs) throughout the state, it is not available to projects served by Publicly Owned Utilities (POUs). In addition, the new system implements VNM at the project level, not at the individual building level (the CUAC tracks data at the project-level and apartment-type level, but not at the building-level).

If you have any questions relating to usage of the CUAC calculator please contact Adrian Ownby of the CEC at (aownby@energy.state.ca.us) at 916-651-3008.

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ENERGY CONSUMPTION MODEL (CONTINUED)

FAQ's

CTCAC has received numerous questions regarding using the CUAC calculator.

Thus, the CTCAC has come up with answers to frequently asked questions for owners of newly constructed projects or newly constructed projects placing in service during 2009.

Q1: The IRS Section 42 updated utility allowance regulations now permit owners to obtain a utility allowance schedule using an energy consumption model; how will this model work in California?

A1: CTCAC has identified the CUAC as the only acceptable energy consumption model for newly constructed projects or newly constructed projects placing in service during 2009 Tax Credit Developments in California.

Q2: Which tax credit developments can use the CUAC?

A2: At this time, the CTCAC is permitting use of the CUAC to only:

- Newly constructed projects in the design phase (brand new, never previously used buildings)
- Newly constructed projects placing in service during 2009 that meet Title 24, Part 6 standards
- Rehabilitation or adaptive reuse projects that involve tearing the projects building or buildings down to the bare framing, rafters, and foundations, and then rebuilding to meet Title 24, Part 6 standards.

Q3: At what point in a development's timeline will the CUAC software be used?

A3: For a Tax Credit project, and most other affordable housing projects, the CUAC estimate will need to be produced or reproduced at three points in the life of a project.

- First, at the point of initial application where the CUAC utility allowance is crucial to the underwriting of a project. This should be the "draft" version of the CUAC utility allowance.
- Second, when the project begins lease-up, so that tenants are appropriately charged for rent. This should be the "final" locked-in-place version of the CUAC utility allowance and represent the project "as built" as opposed to "as proposed." This or a later "annual update" version of the utility allowance is also the utility allowance that should be sent to the CTCAC as part of any placed-in-service package.
- Third, the "final" version of the CUAC should be updated annually throughout the compliance period. This simply involves having your energy analyst reproduce the utility allowance using the latest version of the CUAC lookup tables, which will contain the most up-to-date version of the utility company rates. This will bring the utility allowance up-to-date.

Q4: Timing of the new utility allowance for LIHTC projects?

A4: The timing of the annual utility allowance should be the start of the month of earliest placed-in-service date (month and day) of all buildings in the project; this would be the appropriate date by which an analyst should deliver an updated CUAC utility allowance to the project. IRS regulations stipulate a 90-day window in which to implement utility allowance changes at the project level.

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ENERGY CONSUMPTION MODEL (CONTINUED)

Q5: Does the CEC have a list of current “qualified providers”?

A5: The CTCAC requires that the signing consultant must be CABEC CEPE-qualified and either a certified HERS Rater or a California licensed mechanical engineer or electrical engineer. The CEC recommends that the same minimum qualifications be required if the CUAC is used for non-LIHTC projects. A list of CEPEs with current residential certifications is available at www.cabec.org/ceperosterall.php. A license verification page is available at the California Board for Professional Engineers and Land Surveyors website at www.pels.ca.gov/consumers/lic_lookup.shtml.

The California HERS providers maintain HERS rater directories:
 CalCERTS at www.calcerts.com/Rater_Directory.cfm,
 CBPCA at www.cbpc.org/HERS/findarater.html, and
 CHEERS at www.cheers.org/ratersearch/default.htm.

Q6: Do IRS utility allowance regulations permit owners’ own staff be certified to perform the modeling of a tax credit development for use with the CUAC?

A6: No, the IRS regulation states “The utility consumption estimates must be calculated by either a properly licensed engineer or a qualified professional approved by the agency (CTCAC) that has jurisdiction over the building (together, qualified professional), and the qualified professional and the building owner **must not be related** within the meaning of section 267(b) or 707(b). Thus, employees of a developer would **not** qualify as permitted qualified professionals for purposes of satisfying these requirements.

Q7: How does using a utility allowance schedule impact the determination of the gross rents for tax credit developments?

A7: The usage of the appropriate utility allowance amounts is crucial in the determination of gross rents under Section 42 regulations for purposes of complying with the maximum gross rent limits as established by HUD annually. If a tax credit project owner were to utilize the incorrect utility allowance amounts at a tax credit project, this could result in a gross rent violation which is a reportable event to the IRS on Form 8823.

Q8: Is the CTCAC the responsible entity for obtaining the applicable utility allowance for tax credit projects?

A8: No, it is the owner’s responsibility to contact the appropriate entity (PHA, Utility Company, HUD or RD) to request the most current utility allowance information. The CTCAC does not collect or maintain the various utility allowance schedules. Failure to maintain or provide the utility allowance schedules and supporting documentation on an annual basis is considered noncompliance.

If you have any questions, please contact Compliance Program Manager, Ammer Singh at (916) 654-6340 or at asingh@treasurer.ca.gov.

Attachments:

- A) CUAC Submission Requirements IRS updated Section 42 utility allowance regulations
- B) IRS updated Section 42 utility allowance regulations

ENERGY CONSUMPTION MODEL (CONTINUED)

4.5.1 SAMPLE HFA POLICIES—OTHER STATES

The following are examples of utility allowance policies for a few HFA that have adopted the IRS ruling, allowing projects to use an ECM.

- Washington State: www.wshfc.org/managers/ManualTaxCredit/290_AppendixOUtilityAllowanceProcedures.pdf
- North Carolina: www.nchfa.com/Rental/Mutilityallow.aspx

4.5.2 SAMPLE SUBMISSION REQUIREMENTS

The following document describes the submission requirements that the California HFA (the TCAC) developed for a project that wishes to use its ECM approach (the California Utility Allowance Calculator). This document can be found at www.treasurer.ca.gov/ctcac/2009/cuac/requirements.pdf

CALIFORNIA TAX CREDIT ALLOCATION COMMITTEE (TCAC)**2009 CALIFORNIA UTILITY ALLOWANCE CALCULATOR (CUAC) ESTIMATE
SUBMISSION REQUIREMENTS****PREFACE**

The California Utility Allowance Calculator (CUAC) is a tool to provide an estimate of what tenants will pay for utilities. The estimate will be more accurate than estimates typically available through the use of a Public Housing Authority Utility Allowance Schedule. This tool will be used by qualified energy analysts (as defined in TCAC Regulation Section 10322(h)(20)) consultants working for affordable housing developers. In its present form, the CUAC is intended for use with new construction projects in the design phase (brand new, never previously used buildings); newly constructed projects placing in service during 2009 that meet Title 24, Part 6 standards; and only those rehabilitation or adaptive reuse projects that involve tearing the project's building(s) down to the bare framing, rafters and foundation and then rebuilding it shall use the CUAC in its current state. New construction shall include projects built to the 2005 or later Building Energy-Efficiency Standards, Title 24, Part 6 (the Standards) which were effective October 1, 2005. Appropriate use of the CUAC requires verification of what is actually built, as opposed to what had been proposed, so that projects are accurately modeled using the most current approved California Energy Commission compliance software. Energy analysts using the CUAC shall investigate and confirm the relevant energy-efficiency measures which are actually used in construction of the project, once the project has been completed, and model the units and building(s) as built. These relevant energy-efficiency measures include any components, materials, systems, etc. that impact the building's energy efficiency, including but not limited to the building envelope, heating systems, cooling systems, domestic hot water systems, and installed lighting systems. Energy analysts shall also confirm that appliances comply with the applicable California Appliance Efficiency Regulations, Title 20.

WHAT EACH APPLICANT OR OWNER SHALL SUBMIT FOR ALL PROJECTS

These certification and submission requirements apply to all applicants seeking Housing Tax Credits from the California Tax Credit Allocation Committee under California's Low-Income Housing Tax Credit program. These requirements apply whether the applicant is seeking, or has already been awarded, competitive 9% credit, or credit used in conjunction with tax exempt bond financing, or "ARRA Funding"

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ENERGY CONSUMPTION MODEL (CONTINUED)

Section 1602 funds or TCAP funds. All CUAC estimates shall be completed by an independent third party and shall be at the expense of the developer. All CUAC estimates shall include a report, signed by the qualified professional energy analyst (as defined in TCAC Regulation Section 10322(h)(20)), certifying the following:

- The date the CUAC estimate was prepared and the name of project the estimate was prepared for.
- The name, address and phone number of the analyst who prepared and certified to the accuracy of the CUAC estimate (NOTE: the preparer and certifying analyst shall be the same person).
- Proof of the energy analyst's qualifications to use the CUAC, including a current California Association of Building Energy Consultant's (CABEC) Certified Energy Plans Examiner (CEPE) certification number, and their California engineering license number or their California Home Energy Rating Systems (HERS) certification number.
- A statement that the analyst and the owner of the project, the project applicant, and the project's principals (general partners, members, etc.), are not related parties as defined by TCAC Regulation 10302(gg) and the Internal Revenue Code section 267(b) and 707(b).
- A statement that CUAC estimate is based solely on the professional building energy modeling and analysis completed by the qualified professional building analyst who signed the CUAC estimate.
- A copy of the completed CARE tariff eligibility analysis done as required by the CUAC User's Guide (if applicable).
- A copy of the California Energy Commission's CF-1R compliance document for the project.

ADDITIONAL REQUIREMENTS FOR PROJECTS THAT HAVE RECENTLY BEEN PLACED IN SERVICE

Energy analysts who are submitting a CUAC estimate for a newly completed project built to the 2005 or later Standards shall confirm the energy-efficiency measures of the project's units and buildings. The energy analyst shall confirm the data used in completing the CUAC estimate is accurate, including all relevant energy-efficiency measures. If unable to confirm the energy-efficiency measures actually used in the completed units and building(s), the analyst shall use conservative default assumptions needed to meet the minimum requirements under the appropriate Standards. The analyst shall also identify the utility providers, confirm that the appropriate tariff was used in the CUAC estimate, confirm building orientation, determine the buildings' unit mix, and apartment features and unit floor plan layout. This shall be done through direct observation (including field testing or sampling at a minimum rate of 1:7 units), official documentation, or third-party resources. All CUAC estimates shall include a report, certifying to all of the items listed above, as well as the following additional items:

- Explanation of any testing or sampling done to confirm the constructed units and/or building(s) features.
- A list of all third party resources used to confirm the constructed building(s) features, including copies of the building permits and the name and phone number of any HERS rater(s) that conducted review(s) of the project's units and /or building(s).
- Copies of any documentation relied upon to confirm the energy-efficiency measures used in the modeling of the constructed units and/or building(s).
- Copies of any completed residential compliance forms (CF-1R, CF-4R, CF-6R, etc.) for the project's units and/or building(s) that were completed at the design phase and upon final construction.
- A list and justification of any conservative default assumptions (Title 24, Part 6 Standards) that were used by the energy analyst in the event the energy analyst was unable to independently confirm the building(s)' energy-efficiency measures.

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5. Energy Efficiency-Based Utility Allowance

The concept of the Energy Efficiency-Based Utility Allowance (EEBUA) is for a PHA to restructure the utility allowance schedule in such a way to promote and reflect energy-efficiency investments in affordable housing. To this end, the PHA would develop, adopt or implement, and promote an additional utility allowance that better reflects energy consumption in properties that have invested in verifiable energy-efficiency upgrades. The intent is not to replace the SUA, but to offer an additional schedule for an “energy-efficient building type.”

The methodology used to develop an EEBUA schedule is not a substitute for the Housing Authority’s current method of creating a utility allowance schedule, but rather builds upon it. The EEBUA can reflect two energy-efficient building types:

- One for new construction built to a PHA defined threshold (e.g. 15% better than the energy code, or to ENERGY STAR standards)
- One for existing construction that has been retrofitted to improve energy performance by a PHA defined threshold (e.g. 20% improvement over existing conditions or the state energy code vintage default).

Using the existing SUA as a baseline, the EEBUA schedules are produced by adjusting the numbers in the SUA to represent energy-efficient versions. The following sections of this report present the methodologies used to develop EEBUA schedules for retrofit and new construction.

Historically, EEBUAs have been adopted to apply to new construction only. This is a great disservice to property owners and tenants because the energy savings opportunities are greater in existing buildings. In the wake of the stimulus funding investments in retrofitting existing buildings, the unprecedented investment in Weatherization Assistance Programs, many building owners are making great strides to improve energy efficiency in their properties. Likely, an EEBUA for existing buildings will encourage them to make deeper energy-efficiency investments.

5.1 RULES GOVERNING EEBUA

5.1.1 PHA EEBUA ADOPTION AND IMPLEMENTATION STEPS

The following outlines the steps that a PHA should take in developing, adopting, and marketing an EEBUA.

- Set PHA goal to develop and offer an EEBUA
- Identify resources to leverage and support EEBUA
- Define EEBUA minimum standards and applicability
- Define quality assurance, verification, and documentation requirements
- Develop form and tracking system for projects that use EEBUA
- Adopt the EEBUA
- Hold kick-off meeting with potential EEBUA users (e.g. building owners, developers)
- Continue to educate local affordable housing community about EEBUA
- Update EEBUA when the SUA is updated.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

SET PHA GOAL TO OFFER AN EEBUA

For the EEBUA to be successful, a PHA must commit to developing and implementing an EEBUA. This entails buy-in from PHA staff and may well require PHA board or commissioner adoption. To support an EEBUA, a PHA should identify utility program resources. For example, a utility or government agency may offer programs that provide technical assistance, incentives, and verification through HERS raters or building performance professionals that could inter-dependently meet their program goals and support an EEBUA. Meeting with utility or public agency program staff will help to identify and collaborate on an effort to assist building owners and developers in meeting the requirements of an EEBUA.

A PHA may be able to partner with a local utility program that may require a HERS rater to quantify and verify energy measures. For example, California's Investor Owned Utilities (IOUs) offer programs and have rigorous quality assurance and verification protocols and documentation requirements that could serve to verify that participating owner/developers meet the EEBUA requirements. Similarly, ENERGY STAR New Homes program requires a HERS rating and documentation.

DEFINE EEBUA MINIMUM REQUIREMENTS AND APPLICABILITY

The PHA must establish minimum requirements. For example, a PHA may establish one or more of the following requirements that:

- New construction must exceed the energy code by 15% (consistent with California utility program requirements)
- Retrofit or rehab projects must improve efficiency by 20% (consistent with California home performance program requirements)
- Achieve ENERGY STAR New Homes, LEED, Enterprise Green Communities, or other green program that contains energy-efficiency requirements.

For consistency and additional resources for energy efficiency, coordinate with the local utility or government programs to cross-promote and leverage resources. Partnering with programs can also provide a mechanism for review of the building simulation model, verification that the measures are installed, and other quality assurance strategies.

The PHA must determine if the EEBUA will apply to new construction, rehab, or both. The PHA must also determine which funding source, or program, applies.

DEFINE QUALITY ASSURANCE, VERIFICATION, AND DOCUMENTATION REQUIREMENTS

To ensure the proper use of the EEBUA, housing authorities rely on a home energy rater (HERS) or home performance professional to verify that the project meets the PHA's EEBUA energy-efficiency requirements. The function of the HERS rater or home performance professional is to audit, analyze via building simulation software, the efficiency of the buildings, make recommendations to the building owner or developer on energy-efficiency upgrades (to exceed energy code or existing conditions) and verify installation of those measures. The HERS rater provides documentation and verification to the building owner/developer to prove that the building's energy-efficiency measures are designed and constructed or rehabilitated to meet EEBUA requirements as well as state energy code and utility program requirements. Requiring consistent documentation and verification is key to streamlining the process for owners/developers. Below is a summary of sources to learn more about HERS providers and raters in your state.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

- **Residential Energy Services Network (RESNET).**¹² An individual who is certified by an accredited HERS provider to inspect and test a home in order to evaluate each of the minimum rated features established by RESNET and prepare a comprehensive HERS rating according to Chapters One and Three of the RESNET Mortgage Industry National Home Energy Rating.¹³ A scoring system established by RESNET in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS index of 100, while a net zero energy home scores a HERS index of 0. The lower a home's HERS index, the more energy efficient it is in comparison to the HERS Reference Home. Each 1-point decrease in the HERS Index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home. Thus a home with a HERS index of 85 is 15% more energy efficient than the HERS Reference Home and a home with a HERS index of 80 is 20% more energy efficient.
- **The Building Performance Institute, Inc. (BPI)**¹⁴ is a national standards development and credentialing organization for residential energy-efficiency retrofit work. BPI offers professional certification examinations on the assessment and upgrade of residential buildings—both single-family and multifamily. BPI also provides accreditation to contracting companies committed to whole house home performance and quality assurance programs that ensure this work adheres to BPI's nationwide technical standards. An independent, not-for-profit organization, they bring together leading building science experts from across North America to develop their standards using a consensus-based methodology.
- **ENERGY STAR.** A home energy rating involves an analysis of a home's construction plans and onsite inspections. Based on the home's plans, the Home Energy rater uses an energy-efficiency software package to perform an energy analysis of the home's design. This analysis yields a projected, pre-construction HERS index. Upon completion of the plan review, the rater will work with the builder to identify the energy-efficiency improvements needed to ensure the house will meet ENERGY STAR performance guidelines. The rater then conducts onsite inspections, typically including a blower door test (to test the leakiness of the house) and a duct test (to test the leakiness of the ducts). Results of these tests, along with inputs derived from the plan review, are used to generate the HERS index score for the home.¹⁵
- **California Home Energy Rating System (HERS) Program.**¹⁶ The California Energy Commission is required by Public Resources Code Section 25942 to establish regulations for a statewide HERS Program to certify home energy rating services in California. The goal of the program is to provide reliable information to differentiate the energy-efficiency levels among California homes and to guide investment in cost-effective home energy-efficiency measures. Phase I of the California HERS regulations, which became effective on June 17, 1999, established field verifications and diagnostic testing services administered by Energy Commission-approved providers. The Energy Commission has a process for certifying HERS raters who perform third-party inspections when verification of duct sealing, thermostatic expansion valves (TXVs), refrigerant charge, airflow measurement, and building envelope sealing measures are used to comply with Title 24, Part 6, of the Building Energy-Efficiency Standards. The adopted amendments included the requirements for California Whole-House Home Energy Ratings ("Phase II") of the HERS regulations to expand the program to provide energy-efficiency ratings for existing and newly constructed residential buildings that include single-family homes and multifamily buildings of three stories or less. The new

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

HERS regulations establish a systematic process for the delivery of whole-house home energy ratings that provide California homeowners and home buyers with information about the energy efficiency of the homes they live in or homes they are considering for purchase. The ratings also provide evaluation of the cost-effectiveness of options to achieve greater energy efficiency in those homes.

REQUIRED DOCUMENTATION

A PHA must determine the appropriate documentation required to prove the project's energy efficiency. In most cases, this will include a form summarizing the results of a building simulation (i.e., energy model), plans, and a HERS verification document. Check with state authorities for requirements regarding the types of software that can be used to create the energy model, and the required forms. For example, in California, the California Energy Commission has approved software—Micropas and Energy Pro, from which results of building simulation are summarized on specific forms. Similarly, verified installation and performance of measures are summarized in a HERS report. Other parts of the country may have approved, or use, other software such as TREAT or REMRATE.

The PHA can impose other requirements on the use of an EEBUA, if desired.

ADOPT THE EEBUA

To adopt an EEBUA, a PHA can take one of three approaches:

1. Obtain approval through the PHA board
2. Declare that the PHA will accept an EEBUA
3. Obtain approval from HUD. In this approach, the PHA requests a waiver from HUD that exempts them from following HUD's requirements.

Each PHA should use its own discretion and internal rules on deciding which approach to use for adopting the EEBUA. Example of board agenda items and policies related to adopting an EEBUA follow in this section.

DEVELOP EEBUA APPLICATION FORM AND TRACKING SYSTEM

The PHA should develop a simple form and process through which developers and owners apply to use an EEBUA. The purpose of the form is to ensure that each project meets the requirements for using an EEBUA and collect information that may be useful for evaluating projects in the future. The application should include:

- Basic project information (number of units, unit types, etc.)
- Location of project to ensure it is located within PHA's jurisdiction
- Financing information to ensure that the project is eligible to use the EEBUA
- Energy performance to ensure that the project meets the minimum requirements
- Project team contacts (energy consultant, HERS rater, home performance professional, etc.)
- Other information at the PHA's discretion.

The PHA should also develop a simple tracking system, such as an Excel workbook or other database, for recording the information.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

EEBUA KICK-OFF MEETING AND MARKETING

To introduce the availability of the EEBUA, a PHA can hold a kick-off meeting to describe the process for applying for an EEBUA, standards, and documentation required. Working with properties as they make their energy-efficiency design and investment decisions, is key to ensuring they meet the PHA's EEBUA standards and verification and documentation requirements.

5.1.2 EEBUA OWNER-DEVELOPER AND PHA PROCEDURES

Below is a sample summary of the steps through which an owner-developer and PHA for an EEBUA is as follows:

- Owner/developer commits to design and build or rehab a property to meet PHA's EEBUA standards
- Owner/developer completes application for an preliminary EEBUA approval to include in financing package
- PHA conditionally approves the use of EEBUA
- Owner/developer designs, builds, or rehabs property to meet PHA's EEBUA standards
- Owner/developer hires a qualified energy consultant/HERS rater to conduct an audit (rehab), analysis, and verification according to PHA's EEBUA documentation and verification requirements
- Owner/developer submits appropriate audit (rehab), analysis, and verification documents to PHA confirming that the property meetings the PHA's EEBUA standards
- PHA grants final use of EEBUA.

NEW CONSTRUCTION

Below is an example of the steps a developer should follow to qualify a new construction project for an EEBUA:

1. Design an energy-efficient project that meets EEBUA requirements (including minimum energy performance standard set by PHA).
2. Seek conditional approval from PHA to use EEBUA. This will enable the developer to leverage the additional financing from an EEBUA during construction.
3. Build project to meet EEBUA requirements (including minimum energy performance standard).
4. Provide approved documentation confirming energy savings. Compliance documentation generally shows results of a building simulation (i.e., energy modeling) process done by either a HERS rater or a Title 24 consultant).
5. Hire HERS rater or have building inspector verify energy savings in building. Ideally, this would be done in conjunction with construction (Step 3), because some HERS measures are verified pre-drywall. In addition, some problems are more easily corrected pre-drywall (e.g., reducing duct leakage). The HERS rater must submit a Final HERS Inspection Report documenting the energy savings of the constructed building.
6. Apply to use EEBUA using PHA's form.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

New Construction Project Documentation includes the following:

- EEBUA application form
- Summary of energy-efficiency measures, energy use, and compliance or energy-efficiency improvement margin
- Final HERS inspection report.

EXISTING (RETROFIT/REHAB) PROJECTS

Below is an example of the steps a developer should follow to qualify a retrofit or rehab project for an EEBUA:

1. Hire HERS rater (or building performance professional) to inspect existing building. Have the HERS rater provide an inspection report, which includes a HERS rating score (in California) or a HERS index (all other areas of United States). This will serve as a “baseline” condition for the project.
2. Hire a HERS rater, building performance professional or an energy consultant to create a model of the existing building conditions using an approved documentation method, and to summarize the results on the approved form. This is the baseline documentation.
3. In consultation with the HERS rater/energy consultant, evaluate energy-efficiency upgrade alternatives. Some energy-efficiency measures are not credited with energy savings, depending on the energy software package. Your HERS rater, building performance specialist, or energy consultant can assist in choosing items that will be given credit.
4. Select the most cost effective upgrades that will enable the building to achieve at least the minimum energy savings required to use an EEBUA. Include a small margin of error (i.e., exceed the minimum energy savings by a few percentage points), in case one of the selected energy-efficiency measures is not installed as planned.
5. Hire a HERS rater or energy consultant to create a model of the proposed building conditions and to summarize results on the approved form. This is the ‘final’ condition.
6. Hire a contractor to install the energy-efficiency measures.
7. Hire the HERS rater to verify that the energy-efficiency measures are installed and to complete a final report documenting the energy savings. The documentation must show that the building meets the minimum energy performance requirement (e.g., 20% more efficient than ‘baseline’ condition) to use an EEBUA.
8. Submit documentation to the PHA, including documentation describing the baseline and final conditions, the final HERS report, and the EEBUA application form.

Documentation for an Existing Property Rehab includes the following (California example):

- EEBUA application form
- Summary of energy-efficiency measures, energy use, and compliance or energy-efficiency improvement margin
- Final HERS inspection report.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

5.2 EXAMPLE OF AN EEBUA—CALIFORNIA

Since 2004, many California PHAs have adopted EEBUA to encourage and reward developers who build energy-efficient affordable housing (or owners who improve the efficiency of existing properties). This initial effort, funded by California ratepayers, was intended to support, and work in conjunction with utility energy-efficiency programs. For about five years, California utilities funded several programs (Designed for Comfort and Affordable Housing Energy-Efficiency Alliance) to provide free services to PHAs to develop EEBUAs and assist them in adopting and implementing an EEBUA. The goal of the programs was to align the EEBUAs with utility program requirements. For example, EEBUAs were adopted for:

- New construction projects that achieved 15% above California’s energy code
- Rehab projects that improved efficiency by 20% over existing conditions.

These requirements are consistent with utility incentive program requirements. Plus, the utility programs provided incentives, design and technical assistance, quality assurance, and verification. However, a PHA can establish any required performance threshold, but will have to rely on internal verification to ensure that the project installs the measures to achieve the required efficiency level.

5.2.1 TENANT SAFETY FACTOR OPTION

To protect the tenant, the PHA must ensure that the increased rents/reduced utility allowances do not exceed the total housing burden. To achieve this, the rent should increase less than the utility allowance decreases. To address this issue, the California model was based on the methodology outlined in this document and provides a ‘safety factor’ to split the benefits between the property owner/developer to allow the tenant to reap some of the economic benefit. This allows the tenant to reap the benefit of efficiency and comfort and reduced energy cost. Typically, the split was that the property owner/developer received 75% of the benefit and the tenant received 25%.

5.2.2 VERIFICATION OF INSTALLED ENERGY MEASURES

To ensure proper use of an energy-efficient utility allowance, the energy-efficiency measures must be verified by a third-party professional—a home energy rater (HERS rater) or home performance professional. The HERS rater or another qualified professional also verifies that the building will meet the minimum energy requirements for using the EEBUA by creating an energy model for the building and verifying proper installation.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

5.3 ILLUSTRATION OF THE FINANCIAL IMPACT OF AN EEBUA

The following calculations illustrate the financial benefits of an EEBUA.

5.3.1 EXAMPLE CALCULATION OF INCREASED REVENUE

The following is a case study to illustrate the impact that an EEBUA schedule would have on a hypothetical new construction project: a 40 two-bedroom units and 12 three-bedroom units. Some of the assumptions (e.g., rents, allowable housing burdens for tenants, “other” laundry income associated with the property, etc.) were drawn from similar apartment complexes. All but one of the units was designed to be affordable to low and very low-income families (41%–47% of median area income). Table 1 excerpts information from a table in the Development Form—Rental Income, in the application submitted to the PHA by the developer. Table 1 shows what the rents and income figures would have been had a New Construction EEBUA schedule been in place and utilized for this project. Table 1 also shows the difference between the rental income using the two schedules. Notice that the developer receives an additional \$8,256 in rents per year over the term of eligibility for the EEBUA schedule without impacting the tenants’ total housing burden.

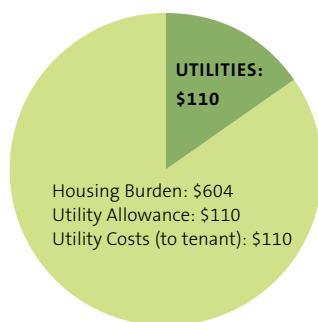
TABLE 1.
HYPOTHETICAL PROJECTED RENTAL INCOME

Unit Type	Number of Units	Total Cost of Housing per Unit	Monthly Utility Allowance per Unit	Monthly Net Rent per Unit	Yearly Gross All Units
Standard Schedule					
2-Bedroom	40	\$604	\$144	\$460	\$220,563
3-Bedroom	12	\$604	\$175	\$429	\$ 61,705
Total Rent per Year					\$282,268
EEBUA New Construction Schedule					
2-Bedroom	40	\$604	\$131	\$473	\$226,803
3-Bedroom	12	\$604	\$161	\$443	\$ 63,721
Total Rent per Year					\$290,524
Total Difference per Year					\$ 8,256

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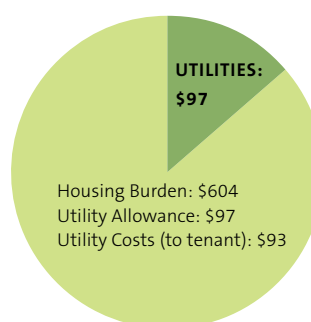
ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

FIGURE 4.
DISTRIBUTION OF
STANDARD UTILITY ALLOWANCES



TOTAL RENT TO OWNER: \$494

FIGURE 5.
DISTRIBUTION OF ENERGY
EFFICIENCY-BASED UTILITY ALLOWANCES



TOTAL RENT TO OWNER: \$507

5.3.2 BENEFITS TO TENANTS AND OWNER-DEVELOPERS

The benefits of this EEBUA to owner-developers and tenants can be explained using an example as shown in the figures above. In Figure 4, if the total allowable housing burden for a particular low-income two-bedroom dwelling unit in Santa Rosa is \$604, with a utility allowance of \$110, then the rent that goes to the building owner is \$494 per unit per month (using the standard utility allowance schedule on page 31).

In Figure 5, if the building owner installs energy-efficiency upgrades qualifying the project for the EEBUA schedule, the utility allowance is reduced to \$97. The remaining \$507 (housing burden of \$604 minus new utility allowance of \$97) goes as rent to the owner-developer. Figure 6 creates a benefit to the owner (a repayment of his/her investment in energy efficiency) with the rent increase from \$494 to \$507 for each dwelling unit per month. The net housing burden of the tenant still remains at \$604. Since the dwelling unit is energy efficient, the tenant may pay \$93 for his/her bills, hence saving \$4 on his/her monthly utility bills.

Table 2, on page 31, shows the 15-year annual net income for our hypothetical project comparing the Standard Utility Allowance schedule with the recommended EEBUA schedule. The top half of the table shows the income and expense estimates from the application for the project. The bottom half shows what the income and expenses would have been in the estimate given the following assumptions:

- \$5000 additional first costs (52 units x \$96/unit)
- Repayment (to the lender) of the \$5000 upgrade cost
- No additional “other” income or additional operating expense (the laundry facilities are assumed to be unchanged)

5

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

TABLE 2.
 INCOME AND EXPENSE COMPARISON

MORTGAGE AMOUNT: \$963,000										
UPGRADE COST: \$5,000										
RENTAL INCOME (STANDARD SCHEDULE): \$282,268										
RENTAL INCOME (ENERGY EFFICIENCY-BASED NEW CONSTRUCTION SCHEDULE): \$290,524										
OTHER INCOME: \$4,800										
	OPERATING EXPENSE: \$105,000									
	MORTGAGE RATE: 4.50%									
	VACANCY RATE: 5.00%									
	EXPENSES: 3.50%									
	RENT AND OTHER RATES: 2.50%									
Year	1	2	3	4	5	6	7	13	14	15
Standard Schedule										
Rental Income	\$282,268	\$289,325	\$296,558	\$303,972	\$311,571	\$319,360	\$327,344	\$379,619	\$389,109	\$398,837
Other Income	\$4,800	\$4,920	\$5,043	\$5,169	\$5,298	\$5,431	\$5,567	\$6,455	\$6,617	\$6,782
Gross Income	\$287,068	\$294,245	\$301,601	\$309,141	\$316,869	\$324,791	\$332,911	\$386,074	\$395,726	\$405,619
Vacancy	\$14,353	\$14,712	\$15,080	\$15,457	\$15,843	\$16,240	\$16,646	\$19,304	\$19,786	\$20,281
Effective Gross Income	\$272,715	\$279,532	\$286,521	\$293,684	\$301,026	\$308,551	\$316,265	\$366,771	\$375,940	\$385,338
Operating Expense	\$105,000	\$107,625	\$110,316	\$113,074	\$115,900	\$118,798	\$121,768	\$141,213	\$144,744	\$148,362
Net Operating Income	\$167,715	\$171,907	\$176,205	\$180,610	\$185,125	\$189,754	\$194,497	\$225,557	\$231,196	\$236,976
Debt Service	\$89,669	\$89,669	\$89,669	\$89,669	\$89,669	\$89,669	\$89,669	\$89,669	\$89,669	\$89,669
Residual Cash	\$78,046	\$82,239	\$86,536	\$90,942	\$95,457	\$100,085	\$104,829	\$135,889	\$141,528	\$147,308
Cumulative Residual	\$78,046	\$160,285	\$246,821	\$337,763	\$433,220	\$533,305	\$638,133	\$1,373,580	\$1,515,108	\$1,662,415
EEBUA New Construction Schedule										
Rental Income	\$290,524	\$297,787	\$305,232	\$312,862	\$320,684	\$328,701	\$336,919	\$390,722	\$400,490	\$410,503
Other Income	\$4,800	\$4,920	\$5,043	\$5,169	\$5,298	\$5,431	\$5,567	\$6,455	\$6,617	\$6,782
Gross Income	\$295,324	\$302,707	\$310,275	\$318,032	\$325,982	\$334,132	\$342,485	\$397,178	\$407,107	\$417,285
Vacancy	\$14,766	\$15,135	\$15,514	\$15,902	\$16,299	\$16,707	\$17,124	\$19,859	\$20,355	\$20,864
Effective Gross Income	\$280,558	\$287,572	\$294,761	\$302,130	\$309,683	\$317,425	\$325,361	\$377,319	\$386,752	\$396,421
Operating Expense	\$105,000	\$107,625	\$110,316	\$113,074	\$115,900	\$118,798	\$121,768	\$141,213	\$144,744	\$148,362
Net Operating Income	\$175,558	\$179,947	\$184,445	\$189,056	\$193,783	\$198,627	\$203,593	\$236,106	\$242,008	\$248,058
Debt Service	\$90,134	\$90,134	\$90,134	\$90,134	\$90,134	\$90,134	\$90,134	\$90,134	\$90,134	\$90,134
Residual Cash	\$85,424	\$89,812	\$94,311	\$98,922	\$103,649	\$108,493	\$113,459	\$145,971	\$151,874	\$157,924
Cumulative Residual	\$85,424	\$175,236	\$269,547	\$368,469	\$472,118	\$580,611	\$694,070	\$1,486,277	\$1,638,151	\$1,796,075
Yearly Difference	\$7,378	\$14,951	\$22,726	\$30,707	\$38,899	\$47,307	\$55,937	\$112,697	\$123,043	\$133,660

Note that in both sections of Table 2, years 8–12 are present in the calculations but collapsed (not shown) since these columns add little additional information. The most notable lesson of the table is that even with a larger debt service payment for the initial four years (more than enough to cover the additional cost of measures even without a utility program incentive) the residual cash is significantly larger. The cumulative residual cash by the sixth year is about \$47,000 larger, and about \$130,000 after 15 years. The developer is able to make more return on his/her investment while the tenants' total housing burden is not increased but rather slightly decreased while they also realize the value of increased comfort.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

5.4 PROJECT CASE STUDIES—FINANCIAL BENEFITS OF EEBUA

The following project summaries provide examples of the financial benefits to the developer of using an EEBUA, instead of the (higher) standard utility allowance.

**5.4.1 SOLARA**

DEVELOPER: Community Housing Works (www.chworks.org)

LOCATION: Poway, Calif. (San Diego County)

CLIMATE ZONE: 10

NUMBER OF UNITS: 56

ENERGY ACHIEVEMENT: Exceeded Title 24 by > 15% and 141 kW Photovoltaic (PV) system designed to meet 90% of tenant electricity load

ENERGY-EFFICIENCY MEASURES INCLUDE: 1) Using passive strategies, such as orienting units to capture prevailing breezes to reduce cooling loads, shading windows, and daylighting; 2) Upgrading equipment, such as R-30 ceiling insulation, low-E windows, tankless water heaters, radiant barrier in roof, and ENERGY STAR labeled appliances, lighting fixtures, and exhaust fans.

FINANCIAL BENEFITS OF EEBUA: Resulted in \$130,000 in additional loans. The owner agreed to pay the electricity bill, eliminating the residents' electricity bills.

**5.4.2 DRAKE'S WAY**

DEVELOPER: EAH Housing (www.eahhousing.org)

LOCATION: Larkspur, Calif. (Marin County)

CLIMATE ZONE: 2

NUMBER OF UNITS: 24

ENERGY ACHIEVEMENTS: Exceeded Title 24 by > 15%, and PV system designed to meet 100% of common area electricity load

ENERGY-EFFICIENCY MEASURES INCLUDE: 1) High-efficiency furnace (94% AFUE) and water heater, and efficient hot water distribution system; 2) Upgraded insulation and low-E windows; 3) 75% ENERGY STAR labeled light fixtures) and 100% ENERGY STAR appliances

FINANCIAL BENEFITS OF EEBUA: Allowed developer to increase first mortgage proceeds by \$52,000.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)



5.4.3 SAN CLEMENTE PLACE

DEVELOPER: EAH Housing (www.eahhousing.org)

LOCATION: Corte Madera, Calif. (Marin County)

CLIMATE ZONE: 2

NUMBER OF UNITS: 79

ENERGY ACHIEVEMENT: Exceeded Title 24 by > 15%

ENERGY-EFFICIENCY MEASURES INCLUDE: 1) Upgraded windows (low-E, Argon filled); 2) Radiant barrier and upgraded insulation in roof (R-38), R-6 slab insulation; 3) Efficient mechanical equipment, lighting, and appliances

FINANCIAL BENEFITS OF EEBUA: Resulted in approximately \$100,000 additional permanent mortgage financing



5.4.4 NUEVO AMANECER

DEVELOPER: South County Housing (www.homedepotfoundation.org)

LOCATION: Pajaro, Calif. (Monterey County)

CLIMATE ZONE: 3

NUMBER OF UNITS: 63

ENERGY ACHIEVEMENT: Exceeded Title 24 by > 20%, PV system designed to offset common area electricity load.

ENERGY-EFFICIENCY MEASURES INCLUDE: 1) Orienting building (along east-west axis) and sizing overhangs to enable daylighting but reduce heat gain; 2) Upgraded wall and ceiling insulation; 3) Low-E windows; 4) Fluorescent lighting and exterior photocell lighting controls; 5) ENERGY STAR appliances

FINANCIAL BENEFITS OF EEBUA: Resulted in over \$14,000 of additional financing

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

5.5 SAMPLE METHODOLOGY FOR DEVELOPING AN EEBUA SCHEDULE

5.5.1 INTRODUCTION

The following sections of this report present the methodologies used to develop the EEBUA schedules for new construction. A similar approach could be used to develop the EEBUA schedules for retrofits that achieve a minimum energy performance (e.g., 20% improvement over existing conditions).

5.5.2 ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE FOR RETROFIT

Adjusting the Standard Utility Allowance schedule for energy-efficient retrofit projects is very straightforward. A 20% improvement in energy efficiency will correspond to at least 20% reduction in energy costs. However, a “cushion” is built into the adjustment to ensure that the tenant benefits by reducing the utility allowance benefit by only 15%. The Standard Utility Allowance schedule is proportionately reduced to produce the EEBUA schedules for retrofit buildings.

5.5.3 ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE FOR NEW CONSTRUCTION

The process for adjusting the standard utility schedule for energy-efficient new construction is to develop a ratio of energy use in efficient new construction compared to typical existing construction. In a building simulation, we analyzed the performance of a set of typical buildings with a set of features representing an average of building vintages (e.g., 1980 building practices). We then used these results to create a ratio between the energy performance of the “existing construction” models and the performance of those same buildings as if they were built to a standard 15% better than the current energy standards. That resulting ratio is then applied to the existing utility allowance schedule to generate the EEBUA schedule for new construction.

The Building Models

Two building models were used for low-rise construction, one 4-unit model and another 16-unit model. The results are based on an average of the energy budgets from the two model types. The basis for the set of building models is a typical 4-unit building and a standard two-story, 16-unit multifamily building developed by the California Energy Commission. The 16 units are arranged linearly with a central common wall and eight units opening on each long wall.

A version of these models were then developed with all units of one unit type; a type found in the PHA Utility Allowance schedules— one-bedroom units, two-bedroom units, etc. This resulted in 10 building models: one with 16 one-bedroom apartments, one with 16 two-bedroom apartments, etc. We also developed versions of the model for representing gas and electric space heating. The conditioned volume and envelope areas were increased to match the unit type (number of bedrooms per apartment). The ratio of window area to floor area was kept constant across all the models.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

The building features (wall insulation, furnace efficiency, window specifications, etc.) for models representing the existing condition were taken from the California Residential Manual's section on default assumptions for modeling existing buildings¹⁷ and can be found in Table 3 below. The features used for the “existing” models are what the California Energy Commission considers to be typical for 1978 vintage homes, but may actually be better (more efficient) than what is likely to be found as an average of conditions for a population of existing buildings in California.

TABLE 3.
CALIFORNIA ENERGY COMMISSION VINTAGE DEFAULT
VALUES TYPICAL FOR 1978 HOMES FOR CLIMATE ZONE 2

Sonoma County — Climate Zone 2	Low-Rise Existing	High-Rise Existing	2005 Low-Rise	2005 High-Rise
Roof Insulation (R-Value)	R-19	R-19	R-30	R-30
Radiant Barrier	No	No	Yes	Yes
Wall (R-Value)	R-11	R-11	R-13	R-13
Slab Edge	0.76	0.76	0.76	0.76
Raised Concrete (R-Value)	N/A	8	N/A	8
Duct Insulation	R-2.1	R-2.1	R-6	R-4.2
Leakage Area (SLA)	4.9	4.9	4.9	4.9
Verified Duct Leakage	14%	11%	Not verified	11%
Window U-Factor	1.19	1.23	0.57	0.47
Window SHGC	0.83	0.82	0.4	0.31
Space Heating — Gas Furnace (Central)	0.78	0.78	0.78	0.78
Space Heating — (HSPF) Electric Resistance	3.41	3.41	N/A	3.41
Space Heating — (HSPF) Heat Pump Split	N/A	6.6	7.7	7.7
Space Cooling — (SEER) Heat Pump Split	N/A	8.9	13	13
Space Cooling — (EER) Heat Pump	N/A	N/A	10	10
Space Cooling — (SEER) Room AC	N/A	8.9	N/A	N/A
Space Cooling — (EER) Room AC	N/A	6.2	10	10
Space Cooling — (SEER) Central AC	8	9.1	13	13
TXV	No	No	Yes	Yes
Thermostat Setback	No	No	Yes	Yes
Water Heating — Gas	0.525	0.525	0.575	0.575
Water Heating — Electric	0.877	0.877	0.904	0.904

One four-story model was used for high-rise simulation. A version of this model was then developed with all units of one unit type. This resulted in five models. For high-rise, only 1998 vintage buildings are modeled for existing buildings. In other words, it is assumed that the average high-rise building in the Housing Authority's jurisdiction is built around 1998.

For high-rise buildings, the overall building area was kept constant. The distinction between the unit types by number of bedrooms was created by increasing the number of units, and the corresponding number of water heating systems, etc. in each model. The ratio of the window to wall area remained constant.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

The Analysis

We performed the analysis using Micropas (v7.03) and EnergyPro (v4.403), programs certified by the California Energy Commission to analyze residential buildings for code compliance. Each of the building models was analyzed in California's climate zones 1 and 2.¹⁸ Micropas generates results in the form of an energy budget for Space Heating, Space Cooling and Water Heating for the proposed building and an energy budget for a standard building, in kbtu/sf/yr.¹⁹ The standard building is the same building as the proposed, but with features (insulation, equipment efficiency, etc.) that allow it to just meet the minimum requirements of the current building code. We added features to generate a proposed budget that was 15% lower (better) than the standard budget.

We used a separate building model for each unit type (e.g., studio, one-bedroom, etc.) to get more accurate results. The increase in square footage from one-unit type to the next is not linear and neither is the performance. For example, just if a two-bedroom unit is X% larger than a one-bedroom unit, it doesn't mean that it will also consume X% more energy, or that the energy it consumes per square foot will be the same. Nor is a three-bedroom unit the same percentage or amount (square footage) larger than a two-bedroom as a two-bedroom is over a one-bedroom.

By dividing the components (heating, cooling or water heating energy) of the energy budget from the EEBUA models by the corresponding components from the "existing" models, we created a ratio between the two budgets. Those are the adjustment factors we used for reducing the existing utility allowance.

For high-rise models, a similar process with EnergyPro was used. The differences are that EnergyPro reports energy usage in btu. We then used model information to convert the units into kbtu/sf/yr.

The "Safety" Factor

In addition to the method used to develop the EEBUA schedules, a further "safety factor" was applied to the adjustment factors. Within our tool, only 75% of the savings from energy efficiency actually goes to reducing the utility allowance. This serves the dual process of providing a built-in cushion to protect the tenants and passes some of the economic benefit directly to the tenants. For example, the gas space heating budget for the "existing" version of the two-bedroom model in climate zone 9 is 3.82 kbtu/sf/yr and the same budget from the EEBUA schedule for new construction is 3.31 kbtu/sf/yr. This results in a ratio of 0.87. After one quarter of the savings are "given" to the tenant, the resulting adjustment factor is 0.90. This means that although the tenant's heating energy consumption (and therefore bill for space heating) is reduced by 13%, their space heating utility allowance is only reduced by 10%.

5.5.4 THE ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE SCHEDULE TOOL

Using a Microsoft® Excel spreadsheet, we built this methodology into a simple tool (Figure 6) that the PHA can use in future years to update its EEBUA schedules on its own. The tool requires the user to input the following information:

- Standard allowances for space heating, space cooling, and water heating for each unit type.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

- Percentage of housing stock that exists in this jurisdiction (for example, the housing stock could be 50% of 16-unit multifamily, 20% high-rise and 20% single family). To calculate the EEBUA for this report, the assumption is made that the housing stock for apt/condo/duplex is 49% of four units, 49% of 16 units, and 2% of four-story high-rise multifamily buildings based on information given by the PHA.
- What percentage of the jurisdiction is in what climate zone?²⁰ We expect that this input (percentage of jurisdiction in each climate zone) should remain the same as when the EEBUA was originally created. Based on estimates derived from climate zone maps, 20% climate zone 1 and 80% climate zone 2 were used in calculations for this report.

The tool’s output is the adjusted set of allowances for an Energy Efficiency-Based Utility Allowance schedule for new construction and retrofit buildings based on the updated Standard Utility Allowance schedule.

FIGURE 6.
 ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE SCHEDULE TOOL

Jurisdiction:		Housing Authority of the County of Sonoma — Attached Units					
% Multifamily (04):	49%	% Multifamily (16):			49%		
% High-Rise (4-Story):	2%	% High Rise (10-Story):			0%		
% Single Family:	0%						
Select Climate Zone:	Climate Zone 02 ▼	Climate Zone 01 ▼	Climate Zone 05 ▼				
Enter % of Area:	80%	20%	0%				
	SRO	0-Bedroom	1-Bedroom	2-Bedroom	3-Bedroom	4-Bedroom	5-Bedroom
Standard							
Gas Space Heating	\$0.00	\$14.00	\$18.00	\$25.00	\$29.00	\$38.00	\$0.00
Gas Water Heating	\$0.00	\$ 7.00	\$ 9.00	\$ 9.00	\$11.00	\$14.00	\$0.00
Propane Space Heating	\$0.00	\$35.00	\$46.00	\$64.00	\$72.00	\$81.00	\$0.00
Propane Water Heating	\$0.00	\$17.00	\$22.00	\$25.00	\$31.00	\$36.00	\$0.00
Electric Space Heating	\$0.00	\$19.00	\$26.00	\$37.00	\$47.00	\$57.00	\$0.00
Electric Cooling	\$0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$0.00
Electric Water Heating	\$0.00	\$15.00	\$19.00	\$22.00	\$28.00	\$34.00	\$0.00
Energy-Efficient Retrofit							
Gas Space Heating	\$0.00	\$12.00	\$15.00	\$21.00	\$25.00	\$32.00	\$0.00
Gas Water Heating	\$0.00	\$ 6.00	\$ 8.00	\$ 8.00	\$ 9.00	\$12.00	\$0.00
Propane Space Heating	\$0.00	\$30.00	\$39.00	\$54.00	\$61.00	\$69.00	\$0.00
Propane Water Heating	\$0.00	\$14.00	\$19.00	\$21.00	\$26.00	\$31.00	\$0.00
Electric Space Heating	\$0.00	\$16.00	\$22.00	\$31.00	\$40.00	\$48.00	\$0.00
Electric Cooling	\$0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$0.00
Electric Water Heating	\$0.00	\$13.00	\$16.00	\$19.00	\$24.00	\$29.00	\$0.00
Energy-Efficient New Construction							
Gas Space Heating	\$0.00	\$ 8.00	\$10.00	\$14.00	\$17.00	\$22.00	\$0.00
Gas Water Heating	\$0.00	\$ 6.00	\$ 7.00	\$ 7.00	\$ 9.00	\$12.00	\$0.00
Propane Space Heating	\$0.00	\$20.00	\$26.00	\$37.00	\$41.00	\$46.00	\$0.00
Propane Water Heating	\$0.00	\$14.00	\$18.00	\$21.00	\$26.00	\$30.00	\$0.00
Electric Space Heating	\$0.00	\$ 9.00	\$12.00	\$17.00	\$22.00	\$27.00	\$0.00
Electric Cooling	\$0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$0.00
Electric Water Heating	\$0.00	\$10.00	\$12.00	\$14.00	\$18.00	\$22.00	\$0.00

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

5.6 SAMPLE EEBUA POLICIES AND FORMS

The following section presents sample EEBUA policies and forms. These examples are presented for California and based on California energy codes, etc.

5.6.1 EEBUA PHA BOARD AGENDA ITEM SAMPLE

DATE: December 14, 2004

TO: Housing Authority Commissioners

SUBJECT: Promoting Energy Efficiency and Affordable Housing (District: All)

Summary

The goal of an environmentally friendly and efficient city will be reached through a variety of creative approaches, and today's action provides a step toward reaching that goal. Many of the housing projects in the PHA's jurisdiction are funded by tax credits and are eligible to receive additional credits and funding for energy-efficiency upgrades. Adoption of Energy Efficiency-Based Utility Allowances and implementation of the "Designed for Comfort: Efficient Affordable Housing" program will lower utility bills, save energy and provide a long-term mechanism for owner-developers to recover their investment in energy efficiency and on-site generation. This policy demonstrates our County's commitment to reduce the region's reliance on outside energy sources, and an understanding of the correlation between energy savings, home affordability, and comfort.

Recommendation(s)

Direct the Director of the PHA to adopt and implement an Energy Efficiency-Based Utility Allowance schedule.

Fiscal Impact

No impact to the General Fund is associated with this action. The program can be administered with existing staff and resources.

Background

Our Board has consistently sought new ways to increase affordable public housing, while maintaining practices that enhance its chance for success. For tenant and owner alike, utility costs can be an insurmountable burden that can lead to the failure of the project or the homelessness of the tenant. The California Public Utilities Commission recognizes the need to promote reduced energy consumption in affordable housing projects, and has funded a program to assist owners and builders of affordable housing to incorporate energy efficiency and on-site generation into their new and rehabilitation projects. By utilizing this program, we will help increase the economic viability of affordable housing projects, while at the same time working toward our Board's goal of energy independence for our region by promoting energy efficiency and use of solar energy systems.

Energy Efficiency-Based Utility Allowance Schedules

Energy Efficiency-Based Utility Allowances (EEBUA) allow owners and developers to recover their investment in energy efficiency and on-site generation in rehabilitation and new construction projects. An EEBUA works on the principle that if a project is energy efficient, the utility allowance can be lowered, thereby allowing the savings amount to be added to the owner's rent, increasing project cash

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

flow and enhancing the viability of affordable housing projects. This results in positive benefits with no adverse effects on the tenant.

To avoid adverse impact on the tenants, the EEBUA has a factor built in ensuring that part of the cash benefit of the energy-efficiency improvements will flow to the tenants as well as the owner-developer.

These alternative utility allowance schedules are based on the existing Standard Utility Allowance schedule published annually by the County Housing Authority. These rent schedules are used for rental units that are being subsidized with federal housing funds such as the Section 8, Community Development Block Grant and HOME Partnership programs. The EEBUA can be applied to both existing and new construction housing stock. Adopting these alternative utility allowance schedules does not eliminate the existing Standard Utility Allowance schedule, which will continue to be used for rental units of average energy use. However, any dwelling unit determined to be energy efficient may qualify for the Energy Efficiency-Based Utility Allowance. Participation is voluntary and the burden of proof is on the owner-developer who must provide state approved documentation that provides reliable information to verify energy efficiency.

For projects that are energy efficient (20% better than existing conditions for rehab projects, 15% better than 2001 Title 24 for new projects), owner-developers must provide California Energy Commission approved compliance documentation using prescribed energy compliance software programs. They are also asked to provide a Home Energy Rating System report verifying installation of the measures identified in the compliance documentation. For projects that install on-site generation to serve the units, the owner-developer must follow procedures developed by the Housing Authority.

The federal Department of Housing and Urban Development (HUD) has recognized the effectiveness of the Energy Efficiency-Based Utility Allowance schedule, and identified it as a “best practice” in its March-April edition of the online newsletter: “Public Housing Energy Conservation Clearinghouse News.” In that report, HUD highlighted the efforts of Riverside County to adopt and implement an Energy Efficiency-Based Utility Allowance schedule.

Qualifying for an Energy Efficiency-Based or On-Site Generation Utility Allowance

To qualify for an Energy Efficiency-Based Utility Allowance, a new construction project must exceed California’s State Energy Code, Title 24, by at least 15%. This requirement is consistent with the Investor Owned Utility energy-efficiency residential new construction incentive program’s performance threshold. A rehabilitation project can qualify if the owner improves energy efficiency by 20% over existing conditions. Improvements to meet either of these criteria must be verified by qualified third parties.

Conclusion

The goal of an environmentally friendly and efficient city will be reached through a variety of creative approaches. Adoption of Energy Efficiency-Based Utility Allowance is one such approach. It will lower utility bills, save energy and provide a long-term mechanism for owner-developers to recover their investment in energy efficiency. This policy demonstrates our County’s commitment to reduce the region’s reliance on outside energy sources, and an understanding of the correlation between energy savings, home affordability, and comfort. We urge your support.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

5.6.2 SAMPLE PHA POLICIES AND PROCEDURES

The following is a sample of a policies and procedures document for a California PHA, describing to project teams how to use an EEBUA.

DRAFT — SAMPLE

**XXXX Housing Authority
Energy Efficiency-Based Utility Allowance Schedule
Policies and Procedures**

The XXXX Housing Authority is offering an Energy Efficiency-Based Utility Allowance schedule to new construction projects governed by the Housing Authority's utility allowance that qualify based on the policies and procedures outlined herein.

Policy/Program Introduction and Marketing

To kick off the program, the housing authority will provide a board and staff briefing and hold an owner-developer training. Housing Authority staff, participants, and owners/developers will be informed of the purpose and the benefits associated with having this policy. The housing authority will provide a staff briefing and an owner-developer marketing and training meeting to introduce the program, policies, and procedures, but also to direct developers to resources to help them design and construct energy-efficient projects.

Information regarding the EEBUA will be distributed through owner-developer forums/briefings, owner-developer packets, landlord checks, and other venues and opportunities as defined by Housing Authority. The housing authority will also post the availability of the EEBUA and instructions on their website.

Energy Efficiency-Based Utility Allowance Schedule Implementation

The Housing Authority will implement the Energy Efficiency-Based Utility Allowance, by following the implementation procedures outlined below.

To qualify, a project must:

- Be located within the jurisdiction of the XXXX Housing Authority
- Be a new project that exceeds California's Energy Code, Title 24, by a minimum of 15%
- Be an existing project that improves energy efficiency by a minimum of 20% over existing conditions
- Provide California Energy Commission (CEC)²¹-certified compliance documentation confirming energy savings, CEC-certified HERS rating verifying installation of energy-efficiency measures. Detailed steps are outlined below for new construction and rehab projects.

Procedure for Owner-Developers

For any project, an owner-developer must contact Housing Authority Representative (or third-party representative) for assistance and complete a Request for Energy Efficiency-Based Utility Allowance.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

New Construction Projects²²

STEP 1: Design and build an energy-efficient project and provide California Energy Commission (CEC)-certified compliance documentation confirming energy savings. The results of this compliance documentation (through a building simulation process done by either a HERS rater or a Title 24 consultant) are presented in the “CF-1R Form.”

STEP 2: Hire a HERS1 (Home Energy Rating System) rater to inspect the building. Ask the HERS rater to provide an inspection report, which includes a HERS rating score. If the HERS rating indicates that the building’s energy-efficiency rating has surpassed 2008 Title 24 energy code standards by at least 15%, submit the HERS inspection report stating that you have met the requirement to the Housing Authority.

New Construction Project Documentation

1. Request for Energy Efficiency-Based
2. Final CF-1R or Perf-1 Form
3. Final HERS Completion Report

Please submit all documentation identifying that you have met the requirements to:

PHA Contact

Once the documentation is reviewed, you will receive notification indicating whether or not you are approved to apply the Energy Efficiency-Based Utility Allowance.

All qualifying projects are subject to visual inspections by Housing Authority staff or designated party.

5.6.3 SAMPLE EEBUA APPLICATION

Figure 7 is a sample application that could be issued by a PHA for project teams that wish to apply to use an EEBUA. The example is for a project in California, but could be tailored for use in other states.

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

FIGURE 7. (PART 1)
 ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE APPLICATION SAMPLE

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (EEBUA) SCHEDULE APPLICATION	
Application Date:	
Applicant (Developer/Owner Company) Information:	
Company Name:	
Street Address:	
City:	State/Zip:
Contact Name:	Telephone Number:
	Email:
Project Information	
Project Name:	
Street Address:	
City:	State/Zip:
Number of Units:	<input type="checkbox"/> Multi-Family <input type="checkbox"/> Special Needs <input type="checkbox"/> <input type="checkbox"/> Senior <input type="checkbox"/> For-Sale <input type="checkbox"/> SRO
Title 24 Company Name:	
Consultant Name:	Telephone Number:
	Email:
HERS Company Name:	
Rater Name:	Telephone Number:
	Email:
Supporting Document Checklist	
(Please check items attached with this application)	
For Conditional Approval	For Final Approval
1. <input type="checkbox"/> Title 24 Compliance Report Low-Rise (3< floors) & Single Family Projects: CF-1R Form High-Rise Projects (<4 floors): PERF1 Form	2. <input type="checkbox"/> HERS Certificate of Completion All Projects CF-4R 3. <input type="checkbox"/> Certificate of Occupancy
Owner-Developer Agreement	
Owner-Developer:	
Representative Name:	Title:
Authorized Signature:	

EEBUA Form 5/3/11

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

FIGURE 7 (PART 2)
 ENERGY EFFICIENCY-BASED UTILITY ALLOWANCES APPLICATION SAMPLE

Project Name: _____

Project Address: _____

PHA Conditional Approval to use an EEBUA on this project	
Representative Name:	Title:
Date Title 24 Report Received:	% Better than Current Title 24:
Low-Rise (3< floors) & Single Family Projects: CF-1R Form High-Rise Projects (<4 floors): PERF1 Form	Date Approved:
Authorized Signature:	
PHA Final Approval to use an EEBUA on this project	
Representative Name:	Title:
Date HERS Certification Received:	% Better than Current Title 24:
HERS Certificate of Completion of Field Verification	Date Approved:
Authorized Signature:	

By Signing this Agreement, Owner-Developers Agree to:

1) Complete and sign one EEBUA application per qualifying project (see eligibility requirements below) and submit the application and all other required documentation to:

PHA CONTACT HERE

2) Seek full design of, funding for, and installation of measures that achieve at least 15% or more efficiency than current Title 24 standards. When the Title 24 report is complete, developers may submit for conditional approval to use an EEBUA schedule.

3) Notify PHA representatives of any changes or planned changes in equipment specifications or funding that may affect the eligibility of the project qualifying for the EEBUA. If PHA representatives deems that these changes compromise qualifying for EEBUA, then they may revoke authorization for the developer to apply EEBUA.

4) Subsequent to PHA's approval of an EEBUA application, developer agrees to submit a copy of the Certificate of Occupancy.

5) Upon completion of construction, the project developer will submit the following documentation:
 i) A HERS Certificate of Completion of field verification
 ii) Certificate of Occupancy

6) Upon completion, the project is also subject to visual inspection by PHA staff or its designated personnel.

7) Owner agrees that PHA's approval for use of an EEBUA on this project is conditional, subject to compliance with the PHA's guidelines for EEBUA schedules, and may be revoked for failure to meet all the terms of this agreement.

8) Developer agrees not to apply EEBUA to collect tenants' rents until final approval from the PHA is received.

9) Developer agrees to complete the attached Energy Efficient Checklist.

EEBUA Form 5/3/11

ENERGY EFFICIENCY-BASED UTILITY ALLOWANCE (CONTINUED)

FIGURE 8.
 ENERGY EFFICIENCY-BASED UTILITY ALLOWANCES
 SCHEDULE SAMPLE—CITY OF SANTA ROSA, CALIFORNIA

Utility or Service		Monthly Dollar Allowances					
		0 BR	1 BR	2 BR	3 BR	4 BR	5 BR
Heating	a. Natural Gas	\$7.00	\$10.00	\$14.00	\$17.00	\$21.00	\$24.00
	b. Bottle Gas						
	c. Electric	\$6.00	\$9.00	\$10.00	\$10.00	\$10.00	\$10.00
	d. Oil / Other						
Cooking	a. Natural Gas	\$3.00	\$5.00	\$5.00	\$7.00	\$8.00	\$10.00
	b. Bottle Gas						
	c. Electric	\$4.00	\$5.00	\$7.00	\$8.00	\$11.00	\$12.00
	d. Coal / Other						
Other Electric		\$9.00	\$12.00	\$16.00	\$19.00	\$24.00	\$26.00
Air Conditioning		\$0.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
Water Heating	a. Natural Gas	\$7.00	\$10.00	\$14.00	\$16.00	\$21.00	\$24.00
	b. Bottle Gas						
	c. Electric	\$12.00	\$16.00	\$19.00	\$20.00	\$20.00	\$20.00
	d. Oil / Other						
Water		\$15.00	\$17.00	\$20.00	\$29.00	\$36.00	\$39.00
Sewer		\$38.00	\$45.00	\$52.00	\$75.00	\$94.00	\$103.00
Trash Collection		\$17.00	\$17.00	\$17.00	\$17.00	\$17.00	\$17.00
Range / Microwave		\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00
Refrigerator		\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00
Other—specify:							
Actual Family Allowances		Utility or Service		per-month cost			
To be used by the family to compute allowance. Complete below for the actual unit rented.		Heating		\$			
		Cooking		\$			
Name of Family		Other Electric		\$			
		Air Conditioning		\$			
Address of Unit		Water Heating		\$			
		Water		\$			
		Sewer		\$			
		Trash Collection		\$			
		Range / Microwave		\$			
		Refrigerator		\$			
Number of Bedrooms		Other		\$			
		Total		\$			

*Only new construction projects are eligible to use the EEBUA. To qualify, energy efficient new construction projects must be verified to be at least 15% better than the current state minimum standards (2005 Title 24 Energy Efficiency Standards). The current standards can be found at <http://www.energy.ca.gov/title24/2005standards/>

6

6. Guidance on Choosing a Utility Allowance Option

Determining the appropriate utility allowance for a project depends on its financing and availability of options for energy-efficiency utility allowances. This section aims to compare energy-efficient utility allowance options against an SUA and provide a decision process to aid property owner/developers in determining the best utility allowance to pursue (if available). The following table summarizes the differences among the various types of utility allowances.

TABLE 4.
 COMPARISON OF STANDARD AND ENERGY-EFFICIENT UTILITY ALLOWANCE TYPES

Type of Utility Allowance	Project-Specific or Averaged Across PHA Housing Portfolio	UA Reflects Energy Efficiency	Agency Authorizing Use	Financing Type	Agency Responsible or Developing
Standard	Averaged	No	PHA	Section 8 or LIHTC-funded	PHA
Energy Efficiency-Based	Averaged	Yes	PHA	Section 8 or LIHTC-funded	PHA
Energy Consumption Model	Project Specific	Yes	HFA	LIHTC-funded	HFA-designated qualified professional

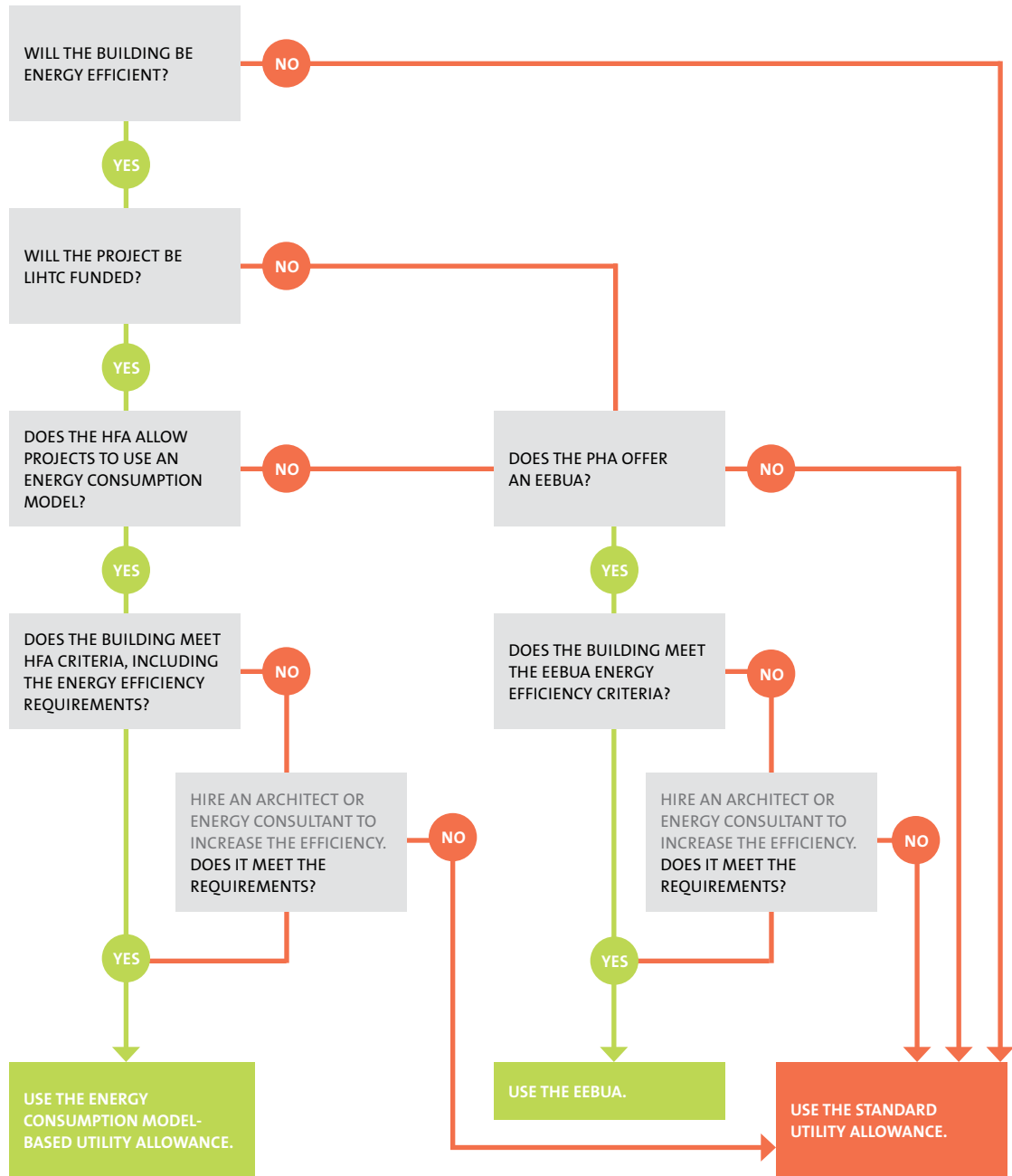
6.1 ENERGY EFFICIENCY UTILITY ALLOWANCE DECISION TREE

The decision tree (Figure 9) on the following page is provided as a tool for developers and owners in deciding what type of utility allowance to use: 1) a standard utility allowance (SUA); 2) an energy efficiency-based utility allowance (EEBUA); or 3) the Energy Consumption Model (ECM).

Each of the steps in the decision tree is described in more detail below, with guidance for developers in deciding whether to answer *Yes* or *No* to each question.

GUIDANCE ON CHOOSING A UTILITY ALLOWANCE OPTION (CONTINUED)

FIGURE 9.
 ENERGY EFFICIENCY UTILITY ALLOWANCE DECISION TREE



EEBUA = Energy Efficiency-Based Utility Allowance; HFA = Housing Finance Agency; LIHTC = Low-Income Housing Tax Credit; PHA = Public Housing Agency

6.2 NAVIGATING THE ENERGY-EFFICIENT UTILITY ALLOWANCE DECISION TREE

6.2.1 GUIDANCE ON ANSWERING DECISION TREE QUESTIONS

Below is a detailed set of questions expanding on the questions outlined in the decision tree on page 46.

Are you planning to design or rehab your property to be energy efficient?

Building should be more energy efficient than code (for new construction) or compared to the existing building (for rehab) if the developer wishes to pursue an EEBUA or ECM. Determine the level of energy efficiency requirements or goals for the project.

Projects that will not be more energy efficient than code (new construction) or existing condition (rehab) or that will only include minimal energy efficiency upgrades should use the standard utility allowance.

Will the project be Low-Income Housing Tax Credit (LIHTC) funded?

The IRS ruling that allows projects to use an ECM-based utility allowance only applies to projects that will be funded with an LIHTC. Consequently, projects that are funded through HUD, RHS, or the local PHA currently cannot use the ECM-based UA.

Does the HFA allow projects to use an Energy Consumption Model (ECM)?

To use the ECM, the project must be located in a state where the HFA has adopted the IRS ruling. Check with your HFA to see if the agency has adopted the IRS ruling that allowing the use of an ECM.

Does the building meet the HFA criteria, including the energy-efficiency requirements?

Check with your HFA to find out its rules and restrictions for using an ECM-based utility allowance. Check to see if your project meets all energy requirements to use a ECM-based utility allowance.

Does the PHA offer an EEBUA?

Some housing authorities offer an EEBUA, while others do not. Developers should first contact their PHA to determine if they offer one. If so, the developer should follow the path marked “Yes.” If not, the developer should consider encouraging the PHA to adopt an EEBUA. This resource guide could serve as a starting point for the PHA, because it includes guidance on developing an EEBUA and describes the benefits of an EEBUA. If the PHA will not adopt an EEBUA, the developer must use the SUA.

Does the building meet the EEBUA energy efficiency criteria?

Because the PHA sets policies and procedures for the EEBUA, the EEBUA criteria will vary depending on the PHA. But typical criteria include the following:

- The project must be located in the PHA’s jurisdiction.
- The project must achieve a minimum energy performance.

GUIDANCE ON CHOOSING A UTILITY ALLOWANCE OPTION (CONTINUED)

Hire the architect or energy consultant to increase the efficiency.**Does it meet the energy efficiency requirements?**

The initial design of the project may not meet the energy requirements to use either the ECM or the EEBUA. For example, perhaps the project is 12% more efficient than code, and the PHA requires that new construction projects be 15% more efficient than code to use the EEBUA. Have the architect, an energy consultant, or another expert revisit the design to look for additional energy efficiency opportunities. Communicate the energy efficiency requirements of the EEBUA or ECM, and any cost and design constraints.

Energy modeling software can be very useful at this stage, because it allows the user to try out different measures and calculate the predicted savings resulting from these measures. Some energy modeling software includes cost estimates for efficiency measures, which can be used to assess the cost effectiveness of different strategies.

6.2.2 DECISION TREE OUTPUT — TYPE OF UTILITY ALLOWANCE RECOMMENDED**Use the Energy Consumption Model**

Once a building owner/developer has determined that the project can use the ECM, they must follow HFA's policies and procedures. Contact the HFA for its specific requirements.

Use the EEBUA

Once a building owner/developer has determined that an EEBUA is appropriate, they must follow their PHA's policies and procedures. Contact your PHA for its specific requirements and EEBUA schedule.

Use the Standard Utility Allowance

Projects that are not energy efficient, or with an energy efficiency that is less than what is required for using an EEBUA or ECM, must use a standard utility allowance.

Projects in areas where the PHA has not adopted an EEBUA and where the HFA does not allow the use of an ECM, must also use the standard utility allowance. However, we encourage building owners and developers to start the dialogue with these agencies to consider adoption of an EEBU or ECM.

Does the PHA have an EEBUA?

Contact the PHA to determine if they offer an EEBUA. If so, the developer should follow the path marked "Yes." If not, the developer should consider encouraging the PHA to adopt an EEBUA. This handbook could serve as a starting point for the PHA, because it includes guidance on developing an EEBUA and describes the benefits of an EEBUA. If the PHA will not adopt an EEBUA, the developer must use the SUA.

Does the building meet the EEBUA criteria?

Because the PHA sets policies and procedures for the EEBUA, the EEBUA criteria will vary depending on the PHA. But typical criteria include the following:

- The project must be located in the PHA's jurisdiction.
- The project must achieve a minimum energy performance.

A

Appendix A: Sample Request for HUD Waiver from the Regulations

The letter requests a waiver under HUD’s regulations 982.517 Utility Allowance Schedule, for the purpose of establishing utility allowances for certified as energy-efficiency buildings.

The efforts of the PHA are responsive to HUD Secretary Alphonso Jackson’s “notice to every public housing authority to make energy efficiency a reality. The PHA is committed to initiatives that will help save energy in all affordable housing in our jurisdiction.”

A significant energy-efficiency effort underway at the PHA and other housing authorities in California is the recognition of certified energy-efficiency buildings as a distinctive building type and category for the purpose of our utility allowance schedule. This category simply provides recognition that there is a measurable difference between the cost of utilities in a housing unit that is built to be energy efficient, and the cost of utilities in a typical housing unit under the Section 8 Tenant Based Assistance program. According to the California Energy Commission, approximately 75% of California’s residential housing stock was built prior to 1982 and not subject to any effective energy building performance standards. Moreover, the CEC also found that these buildings have significantly higher costs than buildings built to high energy-efficiency standards. Recognition of certified energy-efficient buildings corrects various problems attributable to using utility allowances that significantly overstate tenants’ utility costs for this building class.

We have concluded that newly constructed properties built to a standard roughly equivalent EPA’s ENERGY STAR rating, or substantially rehabilitated properties that improve existing energy consumption by 20% or more, constitute distinctive categories of dwellings, with identifiable factors that affect energy consumption and that can be reasonably measured. The benefits to the tenants and housing developers include lower utility bills (with an equal or lesser total housing energy burden) and greater household comfort. Based on this conclusion, the PHA seeks to incorporate an energy-efficiency building category to our utility allowance schedules.

We understand that HUD’s Legal Counsel has determined that a change to HUD’s regulations is needed to recognize energy-efficiency buildings as a distinctive building type and that the Office of Public and Indian Housing is committed to initiating a rule change. In the interim, the PHA requests a waiver to HUD’s regulation for the purpose of recognizing and setting appropriate utility allowances for certified energy-efficient buildings. The purpose achieved by creating this energy-efficiency building category is threefold: 1) to ensure that utility allowances accurately reflect the energy savings resulting from energy-efficient projects; 2) to lower tenant utility bills and enhance home comfort, without raising the total housing burden; and 3) to encourage the development of affordable energy-efficiency housing by removing barriers caused by overstated utility costs.

A

SAMPLE REQUEST FOR HUD WAIVER FROM THE REGULATIONS (CONTINUED)

In making this request, the PHA has carefully considered the following costs and benefits of implementing an additional category for energy-efficient projects:

- **Protection of Section 8 Tenant.** The waiver will have the effect of lowering utility allowances for certified energy-efficiency buildings. To protect the tenant from increased household energy burdens, the model used to calculate the energy-efficient utility allowance levels includes a safety factor that adjusts (increases) projected utility allowances in favor of the tenants. This safety factor allows us to confidently state that tenant utility allowances will, in most cases, exceed tenant utility costs such that on average tenants will save more on their energy bills.
- **Application of Energy-Efficient Utility Allowances.** Only buildings that meet specific energy-efficiency standards are eligible for the lower utility allowance proposed herein. Accordingly, third-party verification of the energy efficiency of a project is a critical component to implementing this initiative. It will be the responsibility of the builder (owner) to provide proof that the projects are energy third-party efficient, through inspections. This verification comes from two sources:
 - 1) A Title 24 Consultant who conducts a building energy use simulation and analysis. The results must show that the project's energy performance is at least 15% above the energy code (for new construction), or shows an improvement of 20% over existing conditions (in a rehabilitation project). In all cases, the simulation model is based on certain specifications that qualify the project to meet these performance thresholds, *and*
 - 2) A Home Energy Rating System (HERS) report that verifies the above specified measures were installed. The HERS system is a California Energy Commission approved system that certifies HERS raters to inspect, conduct diagnostics on, and verify energy-efficiency measures. These certified HERS raters will report their inspection findings to the owner and the Housing Authority. In California, HERS providers have implemented state-required quality assurance mechanisms, so that all parties can confidently rely on the reports of HERS raters.

The documents from 1) and 2) above provide the PHA confidence that a project actually is energy efficient before PHA authorizes use of the energy-efficient utility allowance. Further, placing the burden on owners and developers to use an existing infrastructure of qualified energy consultants and certified HERS raters relieves the Housing Authority from performing additional staff inspections or significant additional administration for verification. Building that are not certified energy efficient are not eligible for the lower allowance.

VERIFICATION OF ENERGY-EFFICIENT PROJECTS

- **Impact on Housing Authority Resources.** The PHA considers the administration time required to administer the utility allowance for energy-efficient buildings is minimal and will not result in increased cost or administration time.

As mentioned above, the burden of documenting eligibility for the lower allowance is the owner's responsibility. The owner must provide the proper documentation from qualified third parties before use of the EEBSA is granted. The Housing Authority's staff simply ensures that the documents are from qualified personnel and that they verify adequate efficiency improvements.

A

SAMPLE REQUEST FOR HUD WAIVER FROM THE REGULATIONS (CONTINUED)

In addition, the model created to implement this initiative will ease updating of the appropriate utility allowance for qualified energy-efficiency buildings. In the future, when the Housing Authority updates its utility allowance schedule, the numbers from the “standard construction” portion of the schedule are simply plugged into the model, and the updated energy-efficiency allowance generated. The model reflects changes in the composition of energy-efficiency buildings by year of construction and allowances for energy-efficiency buildings can be updated based on inventory of energy efficient buildings.

- **Methodology for Creating an Energy-Efficiency Category.** The methodology used for developing PHA’s energy efficiency-based utility allowance categories was the same used to create the standard categories. Under HUD’s guidance for calculating utility allowances, the guidance provides that the “first step in establishing allowances using an engineering-based methodology is to develop allowance categories that group dwelling units according to factors that affect consumption requirements.” HUD’s standard for setting utility allowances in public housing also recognize relevant factors such as the type of construction and design of the housing project and the energy efficiency of equipment in establishing allowances. The utility allowances under the proposed energy-efficiency category also account for unit type and size as required by HUD’s regulation under 24 CFR 982.

Based on these considerations, the PHA has deemed including an energy-efficiency building category to our utility allowance schedule is a win-win situation for the Housing Authority, tenants, owner-developers, HUD, DOE, EPA, and the Administration’s goals of energy efficiency.

For additional background and information, we have attached a report comparing PHA’s standard utility allowance categories with a proposed category for energy-efficient projects and describe the engineering methodology used to calculate the energy-efficiency utility allowance levels.

Attached, for your information, is background documentation in support of our request. The documentation describes the current utility allowance schedule, the proposed utility allowances for energy buildings, and a description of the methodology used to calculate the utility allowance for energy-efficient buildings.

Our board would appreciate HUD’s timely consideration and approval of our request for a waiver. At this time, we have numerous projects waiting to make a decision about investing in energy efficiency, and we are at risk losing those opportunities. Also, we currently have an opportunity to take advantage of implementation services (free to us, and paid for by the California Public Utilities Commission) to adopt and implement this effort to increase investments in energy efficiency, but the offer of free service is currently slated to expire on December 31, 2005. For both of these reasons, time is of the essence and we would appreciate your prompt attention to our request.

B

Appendix B: Energy-Efficient Utility Allowance Consultants

Below is a list of known firms that provide energy-efficient utility allowance technical assistance to HFA, PHAs, building owners and developers.

BENNINGFIELD GROUP

Benningfield Group, Inc. can provide your housing authority with a HUD “best practice” EEBUA that recognizes efficiency and presents a more realistic utility allowance. Some of the recognized utility cost savings can be added to rent, providing property owners with a mechanism to recoup costs spent building energy-efficient housing. Tenants benefit with reductions in utility costs that offset the increase in rent and leave more dollars in their wallet. Lower utility costs safeguard tenants from utility cost spikes and delivers more certainty in their monthly housing costs.

Another alternative Benningfield Group can provide to housing authorities is the California Utility Allowance Calculator. The CUAC is a fairly new tool for individual projects that provides a more accurate utility cost estimate than one based upon averages. Staff at Benningfield Group helped the California Energy Commission create this original calculator and we work closely with the Tax Credit Allocation Committee to ensure its accurate application and use.

400 Plaza Dr. #120
 Folsom, Calif. 95630
 916-221-3110, ext. 11
www.benningfieldgroup.com

THE NELROD COMPANY®

The Nelrod Company provides assistance in developing energy-efficient utility allowances. Fort Worth Office (additional offices in Silver Spring, Md. and Houston):

3109 Lubbock Avenue
 Fort Worth, Texas 76109
 817-922-9000
www.nelrod.com

2RW CONSULTANTS, INC.

2rw Consultants, Inc. provide professional engineering services to a variety of clients. 2rw places special emphasis on energy and water conservation services in its practices. The 2rw professional staff includes licensed engineering professionals, certified energy managers, design engineers, technicians, drafters, and support staff. 2rw is affiliated with the EPA Green Lights Surveyors and is a Rebuild America Partner and an ENERGY STAR Building Ally. 2rw has Leadership in Energy & Environmental Design (LEED) accredited professionals on staff as well.

100 10th Street, NE, Suite 202
 Charlottesville, Va. 22902-5433
 434-296-2116
www.2rw.com

C

Appendix C: Other Resources

The resources below are provided to support the development and implementation of energy-efficient utility allowances. The first few sections are primarily aimed at PHAs and HFAs that wish to allow projects to use energy-efficient utility allowances. The last section is primarily for developers and owners; it provides resources that suggest energy-efficiency measures.

ENERGY-EFFICIENCY MEASUREMENT TOOLS

There are different tools that measure the energy efficiency of a building relative to a baseline. These provide benchmarking tools that a PHA could use to establish minimum requirements for an EEBUA.

Residential Energy Services Network (RESNET®) Home Energy Rating System (HERS) Index

RESNET's HERS Index describes how a home's energy performance compares to a typical new home, a net-zero energy home, and other benchmarks: www.resnet.us/home-energy-ratings

DOE Builders Challenge Escal

Similar to the HERS Index, the Builders Challenge EnergySmart Home ScaleSM (E-Scale) describes how a home's energy performance compares to a typical new home and a net-zero energy home: www1.eere.energy.gov/buildings/challenge/energysmart.html

THIRD-PARTY ENERGY-EFFICIENCY VERIFICATION RESOURCES

To ensure that a building that will use an energy-efficient utility allowance is truly energy-efficient, a PHA or an HFA that allows the use of an energy-efficient allowance should require that someone who is independent of the project team (a "third party") verifies that all energy-efficiency measures claimed for the energy-efficient utility allowance are actually installed in the home. These people are known as raters. Raters can also perform diagnostic testing, such as determining duct leakage or building envelope leakage.

Residential Energy Services Network (RESNET) Home Energy Rating System (HERS) raters

HERS raters are available across the country and can perform verification of energy-efficiency measures: www.resnet.us/

California Energy Commission HERS Program

The California Energy Commission is required by Public Resources Code Section 25942 to establish regulations for a Home Energy Rating System (HERS) Program to certify home energy rating services in California. These services are to also include field verification and diagnostic testing available through Commission-certified providers and their raters when duct efficiency and envelope leakage measures are installed for complying with the new 1998 building efficiency standards (effective July 1, 1999). The goal of the program is to provide reliable information to differentiate the energy-efficiency levels among California homes and to guide investment in cost-effective home energy-efficiency measures: www.energy.ca.gov/HERS/index.html



OTHER RESOURCES (CONTINUED)

ENERGY-EFFICIENT UTILITY ALLOWANCE POLICY PAPERS AND REPORTS

The following papers provide resources to PHAs and HFAs that are interested in allowing projects to use an energy-efficient utility allowance.

Energy-Efficient Utility Allowances as a Usage Reduction Tool in Pennsylvania

A report by Fisher, Sheehan & Colton describes how energy-efficient utility allowances could be an effective tool in Pennsylvania. Energy-Efficient Utility Allowances as a Usage Reduction Tool in Pennsylvania is available here: www.fsconline.com/downloads/Papers/2009%2006%20EfficientAllowances.pdf

Utility Allowance Table

Stewards of Affordable Housing for the Future (SAHF) has published a table providing an overview of utility allowances. It includes a description of EEBUAs, in a section on “green utility allowances.” www.sahfnet.org/index_35_2344996176.pdf

ENERGY-EFFICIENT BUILDING PRACTICES

There are various programs for energy-efficient buildings which describe measures used to achieve energy efficiency. Many organizations also offer recommendations for improvements to existing projects. Building developers and owners can look to these programs and recommendations for suggestions in how to achieve energy efficiency in their projects to meet the energy-efficient utility allowance requirements.

Projects can also be fully certified under the programs, gaining marketing recognition, funding opportunities, and other benefits. Some of these programs offer funding opportunities or technical support for affordable projects.

ENERGY STAR for Homes

Besides labeling appliances that meet energy-efficiency requirements, the ENERGY STAR program (from the U.S. Environmental Protection Agency and the U.S. Department of Energy) designates buildings with the ENERGY STAR label for being built 15% more energy efficient than the 2004 International Residential Code and achieving other requirements. ENERGY STAR also has a pilot program for high-rise multifamily projects: www.energystar.gov/

- The Technical Resources website includes a Portfolio Manager for Multi-family buildings: www.energystar.gov/index.cfm?c=affordable_housing.affordable_housing
- The ENERGY STAR Home Improvement website suggests improvements to existing homes: www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_index

DOE Builders Challenge Quality Criteria

The U.S. Department of Energy’s Builders Challenge program includes Builders Challenge Quality Criteria, which specify building requirements for the program: www1.eere.energy.gov/buildings/challenge/bcqc_criteria_glance.html

U.S. Green Building Council’s (USGBC’s) LEED for Homes

The USGBC has created a rating system for buildings that meet requirements for energy efficiency, indoor air quality, and other green measures, called Leadership in Energy Efficiency and Design (LEED). Low-rise projects can use the LEED for Homes Rating System. There is also a pilot program for mid-rise (4–6 story) projects: www.usgbc.org/leed/homes/



OTHER RESOURCES (CONTINUED)

Enterprise Green Communities Criteria

Enterprise Green Communities provides a rating system for buildings that meet energy efficiency, indoor air quality, and other green measures. Funding is also available for qualified affordable housing projects: www.greencommunitiesonline.org/tools/criteria/

USGBC and ASID REGREEN

The REGREEN program for residential remodeling, created by the American Society of Interior Designers (ASID) and USGBC, provides recommendations for owners of existing buildings: www.regreenprogram.org

Build It Green™ GreenPointRATED

Build it Green provides rating systems for projects in California, including programs for single-family and multifamily homes, and for new and existing buildings: www.builditgreen.org/greenpoint-rated/

ENDNOTES

- ¹ Although this shorthand explanation of the 30% rule is close enough that people in the industry know what is meant, it is not technically accurate for a lot of housing. A particular tenant's actual income is seldom the basis from which the 30% is calculated to determine maximum gross rent. Generally, it is the "target" income level for which the housing is reserved that matters. For example, if a property was reserved for households at or below 45% of mean area income and that was \$20,000/year, the gross rent would be \$500/month. If a household in that building only made \$18,000/year, their gross rent is still \$500/month, not \$450/month. There are exceptions to this.
- ² *HUD Low-Income Housing Tax Credits: Calculating Utility Allowances*, Karen Juckett: www.tacdc.org/wpaperhud.pdf
- ³ This method is referred to by HUD as the "Consumption-Based Methodology," but to avoid confusion with the HFA-regulated "Energy Consumption Model," we use the term "Billing Data-Based Methodology" for purposes of this resource.
- ⁴ As a result, very few PHAs even try to get that depth and accuracy of data, and as a consequence the UA schedules are often significantly in error, even when applied only to the housing stock from which the billing data came.
- ⁵ U.S. Department of Housing and Urban Development, Homes and Communities, Public and Indian Housing, Resources & Links: www.hud.gov/offices/pih/programs/ph/phecc/resources.cfm#ua
- ⁶ The full newsletter is available here, with the EEBUA story on page 4: www.hud.gov/offices/pih/programs/ph/phecc/newsletter/mar-apr04.pdf
- ⁷ "Department of the Treasury, Internal Revenue Service, 26 CFR Part 1, Section 42 Utility Allowance Regulations Update": www.irs.gov/irb/2008-39_IRB/ar07.html
- ⁸ As of early 2011, the CEC is working on turning the CUAC into a web-based tool to overcome the limitations imposed by Access and to gain greater control over the files needed for a thorough QA/QC review of a CUAC analysis.
- ⁹ As of early 2011, the CEC is working on converting the CUAC into a Web-based tool to overcome the limitations imposed by Access and to gain greater control over the files needed for a thorough QA/QC review of a CUAC analysis.
- ¹⁰ The CUAC and the associated user guide is available here: www.gosolarcalifornia.org/affordable/cuac/index.php
- ¹¹ Adrian Ownby of the CEC graciously provided input on the development of the CUAC in personal communications.
- ¹² www.resnet.us/rater/what-is-a-hers
- ¹³ www.resnet.us/standards/RESNET_Mortgage_Industry_National_HERS_Standards.pdf
- ¹⁴ www.bpi.org/
- ¹⁵ www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS
- ¹⁶ www.energy.ca.gov/HERS/index.html
- ¹⁷ "CEC Residential Manual for Compliance with the Energy-Efficiency Standards (for Low-Rise Residential Buildings)," 2005. B-12, Table R3-11.
- ¹⁸ Although only the climate zones within the PHA are relevant to the analysis in this report, we use the tool to perform similar analysis for public housing authorities in the rest of the state.
- ¹⁹ Thousands of British Thermal Units per square foot per year.
- ²⁰ Climate Zone maps are available from the California Energy Commission.
- ²¹ California Energy Commission-approved compliance documentation includes: MICROPAS: www.micropas.com/ and EnergyPro: www.energysoft.com/
- ²² New construction includes any new building or "gut rehab" building (all stucco removed) that was permitted under the 2001 Title 24 energy code or subsequent energy codes as revised by the California Energy Commission. A new construction HERS rating requires an inspection prior to occupancy of the building.