



Power A Clean Future Ohio

Affordable Housing Energy Efficiency Toolkit

Scaling up multifamily energy efficiency



TOOLKIT

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Note to toolkit distributors:

This toolkit is intended to be customized for your audience. The Institute for Market Transformation (IMT) recommends your team make changes, such as:

- Replace the Cincinnati example with one in your jurisdiction.
- Add local links in each of the relevant resource sections
- Include context on actions the city would like to see building owners adopt.
- Include relevant city contacts in a prominent location.

You are welcome to reformat this content as long as you connect with Tara Brown (tara.brown@imt.org) for technical assistance, review of your distribution plans and support needs.

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This toolkit was originally developed by the [Institute for Market Transformation](#)

Executive Summary

Multifamily residential buildings in the United States represent an “untapped reservoir of energy savings. Nonprofit research from the American Council for an Energy-Efficient Economy estimated that most U.S. multifamily properties can increase efficiency by 15%–30% through strategic energy management practices like sealing windows and doors, switching to LED lightbulbs, and educating tenants on energy savings.¹ Capturing those kinds of savings is especially vital to affordable housing residents, two-thirds of whom face a high energy burden, spending more than 6% of their income on energy bills.² For companies and jurisdictions that have climate action goals, multifamily property energy savings are a critical component of overall emissions-reduction strategies.

Addressing multifamily property energy use provides wins for many parties, however, there are challenges to upgrading these buildings, the most prominent being access to capital and the landlord-tenant split incentive. The split incentive often occurs in a traditional lease, where the cost of efficiency upgrades is the responsibility of the landlord while the benefits are enjoyed by tenants in the form of lower utility bills and more comfortable spaces. To ensure the landlord and the tenant are incentivized to conserve energy, both parties must be able to realize benefits from decreased energy use.

This Affordable Housing Toolkit (Toolkit) provides affordable housing landlords with the marketing, leasing, funding, and building maintenance tools needed to align the incentives of landlords and tenants.

The Toolkit provides information for landlords, including:

- How to market efficiency initiative to existing and new tenants
- How to make energy efficiency upgrades during unit turnover
- How to enhance savings by adopting energy-management best practices
- How to finance upgrades with local and federal tax incentives and funding sources
- How to incorporate energy-aligned lease language into leases to correct split-incentive issues
- How earning recognition, such as national recognition via the [Green Lease Leaders](#) program, for enhanced building performance brings value

¹ ACEEE. “Multifamily Energy Savings Project.” <https://www.aceee.org/multifamily-project>

² Smart Cities Dive. 2014. “67% of low-income households face high energy burden: ACEEE.” <https://www.smartcitiesdive.com/news/67-of-low-income-households-face-high-energy-burden-aceee/584961/>

By following the steps outlined in the toolkit, affordable housing landlords can upgrade their buildings in a way that improves their bottom line, enhances their reputation, lowers tenant utility bills, and reduces carbon emissions.

PROFILE: WARMUP CINCY

Cincinnati's energy equity program

The 2018 Green Cincinnati Plan included a goal to reduce household energy burden by 10% by 2023. With funding from Duke Energy Ohio, the city launched the WarmUp Cincy initiative to address energy efficiency in apartment buildings with families at or below 200% of the poverty limit. The three-program initiative delivers specific services to tenants and a separate set of services through building owners. However, both work in concert to align the interests of both parties and provide incentives to reduce energy use.

Market Efficiency Initiatives to Existing and New Tenants

While energy and water efficiency can benefit both the landlord and tenant, to achieve this for both parties, it is critical for a landlord to be able to communicate these benefits to tenants. Doing so not only can deploy tenant benefits, such as a lower monthly utility bill, as marketable features of a unit, but also encourage accountability to lead to a more efficient building overall.

Recommended action: Start with owner or staff education

1. Establish guidelines requiring any person responsible for managing a leasing transaction to complete at least one hour of training covering fundamentals of energy efficiency and benchmarking in buildings.
2. Define how energy and water efficiency is viewed in operations and how this benefits tenants (See [Appendix A](#) for sample tenant rules and regulations)
3. Develop a system for ongoing education to keep owner and employees informed of the latest technology, system updates, tools and resources available.

Additional resources

- [Energy Star: To Efficiency & Beyond! Most Popular Webinars for Benchmarking with Portfolio Manager to Improve Performance](#)

Recommended action: Develop a tenant engagement plan

With 70% of a building's energy use under the direct control of the tenant, dedicating resources to educate tenants and occupants about energy efficiency strategies significantly lowers whole-building energy use. Occupant engagement does not have to be extensive or complicated. There are programs, events, and tools to slowly and iteratively integrate energy and water efficiency into day-to-day actions.

1. Develop a communications strategy highlighting building performance and operational efficiency strategies that benefit the tenant. This strategy should include various ways to engage a current and future tenant.
 - a) New incoming tenants: Provide a welcome packet with simple steps they can follow that will save them energy and reduce their utility bill, reduce water leaks and lower wasteful water use, for example.
 - b) Tenants should be encouraged to participate in any local program(s) at no cost.

- c) Existing tenant engagement – identify at least two different ways to provide information to tenants on energy and water efficiency. These could include identifying visible areas to post informative signs or creating materials to distribute via mail slots or under doors.

Additional resources

- Use resources from national programs to promote efficiency throughout the year. Start by signing up for events like [Earth Day](#) and [Energy Efficiency Day](#) to gain access to free resources.
- [ENERGY STAR At Home Tips:](#)
ENERGY STAR provides tips on how to save energy inside and outside the home.
- [ENERGY STAR's Strategies for Engaging Occupants](#)
ENERGY STAR provides guidance on how to create a communications plan to engage occupants on energy savings.
- [ENERGY STAR 8 Great Strategies to Engage Tenants](#)
Proven strategies to engage employees and tenants in saving energy.

Implement Energy Efficiency Improvements During Unit Turnover

Resident turnover in multifamily buildings provides an opportunity to improve energy efficiency in apartment units through cost-effective measures that reduce resident utility consumption. Energy improvements directly benefit the resident upon move-in via reduced utility bills and indirectly benefit the landlord from decreased maintenance calls, a reduction in whole-building energy use, and increased tenant retention.

Recommended action: Create an efficiency checklist for unit turns

Executing a tenant turnover checklist provides that identifies and tracks convenient, cost-effective energy improvements when units are vacant, allowing for deeper systems interventions and improvements that can reduce utility bills and indirectly reduce maintenance calls for building management.

Consult the [Tenant Turnover Checklist \(Appendix B\)](#) for simple, low-cost energy efficiency upgrades that can be performed between tenants.

Additional resources

- [Standards of Affordable Housing for the Future EZ Retrofit Tool](#)
EZ Retrofit is a free, do-it-yourself Excel-based audit tool that gives multifamily property owners and managers an easy way to identify cost-effective energy and water efficiency upgrades.
- [Valuing Energy Efficiency in Multifamily Housing](#)
An approach to cut energy and water bills while increasing property value.

Enhance Savings by Adopting Energy-Management Best Practices

Implementing energy-management best practices in base building systems and common areas ensures consistent operations throughout the lifecycle of the building and provides a defined process that a landlord can track throughout the year to reduce the energy waste and operating costs.

Recommended action: Understand energy and water use through benchmarking.

Understanding building energy use, as well as monitoring it on a regular basis, is a fundamental step in harnessing and maximizing potential energy and financial savings. With greater data access and transparency, tenants and landlords can begin to optimize their spaces and find mutually beneficial strategies.

1. Benchmark your energy and water use and set a savings goal
 - a) Develop a process for collecting and tracking energy and water consumption monthly
 - b) Track data on an excel file or upload to [ENERGY STAR Portfolio Manager](#)- the Environmental Protection Agency's (EPA) free and easy to use tool that is the industry standard for benchmarking buildings.

Recommended action: Implement at least five of the following energy management best practices in your building(s)

1. *Space Heaters*. Prohibit use of space heaters in tenant spaces.
2. *Daytime Cleaning*. Schedule janitorial work to occur during regular business hours to reduce time that building HVAC and lighting equipment are utilized.
3. *Air Filters*. To the extent managed by the tenant, clean and replace air filters as often as recommended by manufacturers. Timely filter replacement can reduce HVAC equipment loads and energy use. Maintaining high indoor air quality can increase occupant comfort and reduce building- related illnesses. Implement a reminder system to encourage tenants to replace their air filters.
4. *Thermostat Set-back*. Use programmable thermostats or other means to lower heating set point and increase cooling set point during unoccupied periods.
5. *Lighting Controls*. Install lighting controls such as occupancy sensors, daylight harvesting, or timers in all non-regularly occupied spaces, including laundry rooms, storage rooms, and bathrooms.

6. *Plug Load Management*. Encourage tenants to turn off or unplug lights, electronics, and appliances when not in use and/or provide advanced power strips.
7. *Ongoing Maintenance*. Obtain regular (quarterly or annual) inspections of HVAC equipment, exhaust fans, etc., if controlled by landlord.
8. *Energy Management*. Conduct base building and common area energy audits at least annually.
9. *Vending Machines*. Prohibit vending machines or place on timers.
10. *Refrigerant Leaks*. Monitor base building HVAC systems and refrigerators for leaks.

Additional resources

- Use the Green Lease Leader Energy-Management Best Practices ([Appendix C](#)) to establish a policy, frequency for maintaining the best practice and track who has taken the action.
- [Video on benchmarking and process](#)
- [Template Energy Disclosure Tracker](#)
Template to track annual ENERGY STAR scores provided by tenants
- [ENERGY STAR Portfolio Manager](#)
Free online tool from the U.S. EPA which allows building owners and tenants to track energy, water, and waste across their portfolios.
- [A Guide to Energy Audits](#) - An introduction to what an energy audit is and explanations of the different options from DOE and Pacific Northwest National Laboratory

Financing Upgrades

Finding the necessary financing for energy efficiency upgrades in affordable housing buildings is the most common barrier landlords face. The following are programs available in Ohio to help finance energy efficiency upgrades through tax credits, rebates, or upfront grant financing. A brief description of each program, as well as a link to their application process(es), has been provided.

Recommended action: explore local and federal funding options Affordable housing building owners may qualify for energy efficiency incentive programs. Before undertaking major building systems or capital projects, *review the qualifying requirements for these financing and incentive programs*. They could provide the additional investment needed (either up front or as a rebate later) to improve the value of the building and the tenants' well-being.

Resources to get started

[Energy Efficiency Home Credit \(Federal\)](#) The Energy Efficient Home Credit, as established by the Energy Policy Act of 2005 and codified under §45L of the Internal Revenue Code, allows eligible developers to claim a \$2,000 tax credit for each newly constructed or substantially reconstructed qualifying residence (no more than three stories in height).

Examples of housing for which this credit applies include:

- Apartments
- Assisted Living Homes
- Condominiums
- Single Family Homes
- Student Housing
- Townhouses

[Ohio Development Services Agency: Energy Loan Fund](#) Ohio Development Services Agency helps small businesses, manufacturers, nonprofits, and local governments implement energy efficiency improvements to lower energy use and costs. Through the Energy Loan Fund eligible applicants receive low-interest financing to install efficiency measures that reduce energy by at least 15 percent. Technical assistance is also available to facilitate the required energy audit for potential applicants.

[Tax Deduction for Commercial Buildings \(Federal\)](#) A tax deduction of up to \$1.80 per square foot is available to owners or designers of commercial buildings or systems that demonstrate a 50% reduction in energy usage accomplished solely through improvements to the heating, cooling, ventilation, hot water, and interior lighting

systems. Partial deductions of up to \$.60 per square foot can be taken for qualifying measures.

[LinkSolar \(PV\) Tax Credit \(Federal\)](#) The federal residential solar energy credit is a tax credit that can be claimed on federal income taxes for a percentage of the cost of a solar photovoltaic (PV) system.” The expenses of the solar PV panels themselves, contractor costs, equipment, and energy storage devices are all included in the credit.

[Commercial PACE Program for Affordable Multifamily Housing \(Federal\)](#) C-PACE is a financing structure that enables owners of commercial, industrial and multifamily residential properties to obtain affordable, long-term funds for 100% of the cost of energy and water efficiency retrofits (as well as for distributed generation investments). It works by allowing building owners to finance qualifying improvements by *placing a voluntary assessment on their property tax bill*, paying for these improvements over time through an additional charge on this bill.

Incorporate Energy-aligned Lease Language

In traditional leases, neither the landlord nor the tenant is incentivized to invest in energy efficiency improvements that can lead to high-performance properties that benefit both entities. However, green leases, also known as energy-aligned leases, help to break down the barriers.

Recommended action: Consider energy-aligned lease language

Before writing your next lease agreement, review opportunities to add in energy-aligned lease language. Sample clauses for two key areas are in italics, below:

- Sharing utility data with landlord allows for the landlord to benchmark building energy use to identify opportunities for efficiency upgrades
SERVICES AND FACILITIES: If electricity or gas is not included in the rent or is not charged separately by Owner, Tenant must arrange for this service directly with the utility, AND share monthly energy usage in kWh (excluding cost amount) to Landlord monthly.
- List who tenants can contact about energy, water, and heating efficiency ideas
To learn more about energy and water savings initiatives please contact our Community Manager [insert name] by phone at [phone number] or email [email address].

Resources to get started

- [Green Lease Language Examples \(Link\)](#)
This guide from the Institute for Market Transformation (IMT) consolidates a variety of green lease or energy-aligned lease language options for more efficiently designed and operated spaces. Many of the examples should be edited or amended to fit each individual building or property need and specifications to reap maximum return.

Earn Recognition for Enhanced Building Performance

Taking action on improving property efficiency can earn industry recognition and celebration, boosting a property and owner's profile. Specifically, the Green Lease Leaders program launched in 2014 by the U.S. Department of Energy's Better Buildings Alliance and the Institute for Market Transformation, recognizes landlords, tenants, and their partners for taking action to create mutually beneficial landlord-tenant relationships that lead to higher-performing buildings and healthier, more sustainable communities. Its recognition criteria are often recognized as the baseline for what constitutes a green or energy-aligned lease.

Its recognition criteria are often recognized as the baseline for what constitutes a green or energy-aligned lease. Participants benefit from established guidelines and free support while developing their leases, as well as peer leadership recognition and substantial energy savings when leases have been implemented. Honorees are announced annually at a major real estate conference.

Recommended action: Review Green Lease Leader criteria

If you can answer "yes" to the following questions, you may be eligible for recognition.

1. Do you invest in energy efficiency improvement projects at property?
2. Do you educate your tenants on ways they can save money on their utility bill through energy- and water-efficient behavior?
3. Do you implement at least two energy efficiency actions during a unit turnover?
4. Do you have energy management best practices procedures and processes to maintain at least five of the recommended actions listed in this toolkit?
5. Do you inform your tenants to contact you to discuss any energy and water conservation activity?
6. Do you and your staff participate in energy efficiency education workshops or training?

Next, visit the Green Lease Leaders website and use the [Audit tool](#) to quickly assess your operational and leasing practice to determine if you meet the requirements, receive one-on-one assistance, and/or achieve Green Lease Leaders recognition.

Appendix A: Sample Tenant Rules and Regulations

Language below can be used in any tenant communication, ranging from emails, to leases to efficiency guides. Notes to the landlord are in grey.

In this document, the terms “you” and “your” refer to all residents signing below; the terms “we,” “us,” and “our” refer to the owner named in the Lease Contract (not to the property manager or anyone else).

We believe that responsible use of our natural resources is a responsibility we all share. In support of our commitment to promoting a “green community,” we request the cooperation of each resident in a wide-range of sustainability and energy conservation initiatives and programs. You agree to support our efforts, and ensure that all household members and guests will comply with all sustainability and energy conservation practices and guidelines applicable to the premises and as described herein. This guideline is both in the interest and the safety of the Tenant and in the interest of maintaining overall low energy and water consumption.

Contact your property manager [insert contact information] for any energy and water efficiency questions.

WATER EFFICIENCY: Water leaks not only wastes water and cost money, but can also cause damage to the community. We make every effort to identify and fix known leaks, but your assistance is critical in identifying leaks within your apartment. If you find a leak in your home, report the leak to Landlord on the day it is recognized to prevent damage to the leased space, to conserve water, and to prevent high utility bill costs.

The Leased Premise includes water-efficient fixtures and appliances to conserve water including, but not limited to, shower heads, faucets, toilets, dishwasher, and clothes washer. Tenant must receive approval from Landlord to replace or alter any of these fixtures or appliances.

Tenant shall consider additional water conservation strategies including, but not limited to, turning off water faucets when water isn’t being used and running dishwasher when fully loaded.

ENERGY EFFICIENCY: The intent of this section is for Tenant to implement responsible best practices to reduce overall energy consumption and monthly utility bill costs.

The Landlord participates in an energy benchmarking program with the United States Environmental Protection Agency (EPA) called ENERGY STAR Portfolio Manager®. This program helps the Landlord improve the energy efficiency of the Building. To this end, Landlord may request Tenant to provide monthly electricity data for the Leased Premise from the utility company.

Landlord note: You may not be benchmarking your buildings energy consumption today but it is good to plan for legislation that may pass in the future. This will allow you to legally be able to request energy data if and when the city passes a benchmarking policy.

Lighting. The Landlord will provide energy efficient light fixtures to conserve energy and reduce Tenant monthly utility bills. Tenant is prohibited from removing these permanent fixtures. If light bulbs need to be replaced, Tenant is responsible for replacing light bulbs with the same energy efficiency specifications as originally provided by the Landlord. Landlord strongly encourages the use of light bulbs and fixtures that have earned the ENERGY STAR or Design Lights Consortium (DLC) label, which are owned by the Tenant.

Temperature Settings. Tenant shall endeavor to use the Landlord provided programmable thermostat in a responsible manner at times when the space is both occupied and unoccupied. Recommended occupied temperatures to consider include a range of 72 to 80 degrees in the summer and 62 to 70 degrees in the winter. Example unoccupied temperatures of the leased premise is 78 degrees or higher in the summer or 64 degrees and lower in the winter. Tenant is prohibited from using space heaters without the written consent of the Landlord.

Appliances and Plug Load Management. Tenant shall consider purchasing home electronics that carry an ENERGY STAR label, when available.

Tenant shall consider using smart motion sensor or timer power strips to control Tenant owned lighting within the Leased Premises to encourage energy savings when not in use. Tenant shall endeavor to implement additional energy savings strategies to reduce energy bills in the Leased Premises including, but not limited to, utilizing power-savings settings for computer monitors, unplugging cell-phone and computer chargers when fully charged, coffee makers, and turning off lights when not in use. Learn more about [ENERGY STAR appliances](#) and the benefit savings to your monthly utility bill.

Appendix B: Tenant Turnover Checklist

For most multifamily building owners and managers, tenant turnover—the period when a current tenant vacates a unit and the subsequent tenant moves in, also known as “unit turn”—represents a prime opportunity for conducting building improvements and maintenance. Often, this process includes tuning up aesthetic and health and safety measures such as replacing carpet, painting walls, or repairing or upgrading fixtures and equipment to ensure the unit is suitable for its next resident. This intervention point in a unit’s lifecycle, also creates an easy opportunity to improve both individual unit and whole-building energy use, unlocking increased financial savings.

Tenant turnover provides a convenient, cost-effective intervention point for energy improvements because the unit is vacant, allowing for deeper systems interventions and improvements that can reduce utility bills and indirectly reduce maintenance calls for building management. For example, in 2016, the U.S. Department of Energy found that if public housing authorities deployed a five-step process of improving energy efficiency during tenant turnover, building managers could reduce an apartment unit’s energy cost by 6-10% with an investment of just six hours of staff time and \$80-\$100 in materials.

ASHRAE Level II: Common Area and Building Systems

ASHRAE, the American Society of Heating, Refrigeration, and Air Conditioning Engineers, offers three difference levels of energy audits. In 2019, The Ohio Development Services Agency offered an Energy Loan Fund to provided “financing for Ohio businesses, non-profits, and public entities to complete energy efficiency and advanced energy projects.” In order to be eligible for funding, applicants had to submit an “ASHRAE Level II or equivalent audit.”³

The ASHRAE Level II audit is designed to review “how the whole building is functioning, and identify the projects that will provide the greatest energy reduction at the best return on investment (ROI).”⁴

In order to help landlords understand and prepare for ASHRAE Level II audits and meet the requirements under the Energy Loan Fund, a checklist of the Common Area Lighting, Appliances, Heating Systems, Building Controls, and Motor features inspected during an audit have been provided. Additionally, the Tenant Turnover Checklist identifies which unit upgrades will be assessed within an ASHRAE Level II audit.

³ Ohio Development Services Agency. 2019. “Energy Loan Fund: Program Guidelines and Application Process.” <https://development.ohio.gov/files/bs/GUIDELINES%20ELF%202019.pdf>

⁴ eMAT. 2019. “Understanding the Difference between ASHRAE Level 1,2, &3 Energy Audits.” <https://www.ematprogram.com/understanding-the-difference-between-ashrae-level-1-2-3-energy-audits/>

Tenant Turn Checklist

	#	ACTION	ASHRAE Level II	FREQUENCY	COMPLETED BY	DATE EXECUTED
Interior Air Sealing	1	Establish a plan to check and repair air leaks every time a unit turns over		One Time Only		
	2	Seal bottom of walls to floor if carpet removed and/or where accessible		Upgrades/New Equipment		
	3	Seal plumbing penetrations (all walls): shower heads, under sinks, water heater		Turnover		
	4	Seal electrical penetrations (all walls, ceilings): outlets, switches, behind oven/fridge, telephone box, intercom, in closet ceilings /floors		Annually		
	5	Re-grout tile floors and walls		Turnover		
	6	Seal at base of bathtubs, toilets		Turnover		
	7	Seal ceiling penetrations at light fixtures		Turnover		
	8	Seal exhaust fan housing and ducts boots to ceiling		Turnover		
	9	Replace entry door weather stripping if necessary	✓	Quarterly		
	10	Caulk around entry door frame and windows		Semi-Annually		
	11	Foam insides door latches (all doors)		Annually		
	12	Seal at stair trends and risers		Semi-Annually		
	13	Install high efficiency windows and/or storm windows (when single-pane glass windows are present)	✓	Upgrades/New Equipment		
Air Conditioning	14	Establish a plan to perform basic inspection of air conditioning units to identify leaks around the unit		One Time Only		
	15	Clean AC filter if necessary		Quarterly		
	16	Seal around AC unit		Turnover		
	17	Clean/replace air handler filter if present		Turnover		

Tenant Turnover Checklist, continued

	#	ACTION	ASHRAE Level II	FREQUENCY	COMPLETED BY	DATE EXECUTED
Domestic Hot Water	18	Check and adjust hot water temperature		Quarterly		
	19	Insulate hot water tank (If R-value of the current insulation is less than 24, add insulation to achieve an R-value of 24 or greater)	✓	Annually		
	20	Insulate exposed DHW pipes	✓	Turnover		
	21	If replacing water heater, convert from gas to electric	✓	Upgrades/New Equipment		
Water	22	Establish a plan to replace all water fixtures (faucets, shower heads, toilets, etc.) with high efficiency fixtures like WaterSense labeled products at the end of their use life.		One Time Only		
	23	Check pipes and fixtures to fix temperature		Turnover		
	24	Correct faucet/shower drips		Turnover		
	25	Check sink flow and install low-flow faucet aerators (i.e. Those that have attained the EPA's WaterSense designation).	✓	Turnover		
	26	Check shower flow and install high-efficiency low-flow showerhead (2 gpm or less) if necessary (i.e. Those that have attained the EPA's WaterSense designation)	✓	Turnover		
	27	Inspect toilets for leaks and repair or replace flappers.		Turnover		
Attic	28	Check and fix attic insulation	✓	Upgrades/New Equipment		
	29	Seal wall top plates in attic if accessible		Annually		
	30	Add attic hatch insulation		One Time Only		
	31	Add attic hatch gasket		One Time Only		

Tenant Turnover Checklist, continued

	#	ACTION	ASHRAE Level II	FREQUENCY	COMPLETED BY	DATE EXECUTED
Lighting	32	Check and replace lightbulbs with LEDs; replace older fixtures if needed		Turnover		
	33	Install LED surface mount light fixtures		Upgrades/New Equipment		
Ventilation	34	Check bath and kitchen exhaust fan flow; clean to improve air flow		Turnover		
	35	Clean bath and kitchen exhaust fans; clean to improve air flow		Turnover		
	36	Check bath and kitchen exhaust fan condition; clean to improve air flow		Turnover		

ASHRAE Level II: Common Area & Equipment Upgrades

	#	ACTION	ASHRAE Level II	FREQUENCY	COMPLETED BY	DATE EXECUTED
Common Area Lighting	1	Install LED Exit Signs	✓	Upgrades/New Equipment		
	2	Install EnergyStar CFL Hardwired or Linear Fluorescent Fixtures (including fixtures operating for 24 hours/day)	✓	Upgrades/New Equipment		
	3	Bi-level Lighting (fixtures that allow for two levels of lighting: High when occupied and Low when unoccupied, significantly reducing common area energy use)	✓	Upgrades/New Equipment		
	4	Install occupancy Sensors for Select Areas (i.e. Laundry Room)	✓	Upgrades/New Equipment		
	5	Check and/or install controls for exterior lighting (i.e. Lighting is automatically reduced when not in use)	✓	Annually		
Appliances	6	Establish a plan to replace all appliance (refrigerator, washing machines, dishwashers, etc.) to ENERGY STAR appliances at the end of their use life		One Time Only		
	7	Convert common area clothes dryers to electric (if gas)	✓	Upgrades/New Equipment		
	8	Replace clothes washers with EnergyStar washer at the end of useful life	✓	Upgrades/New Equipment		
	9	Replace common area refrigerators with EnergyStar refrigerator at the end of useful life	✓	Upgrades/New Equipment		
	10	Replace in-unit refrigerators with an EnergyStar refrigerator at the end of useful life	✓	Upgrades/New Equipment		
	11	Replace in-unit dishwasher with an EnergyStar dishwasher at the end of useful life	✓	Upgrades/New Equipment		
	12	Install EnergyStar CFL Hardwired or Linear Fluorescent Fixtures	✓	Upgrades/New Equipment		
	13	Install EnergyStar Room and Thru-the-Wall Air Conditioners	✓	Upgrades/New Equipment		

ASHRAE Level II: Common Area & Equipment Upgrades, continued

	#	ACTION	ASHRAE Level II	FREQUENCY	COMPLETED BY	DATE EXECUTED
Heating Systems	14	If heating system is gas, replace with electric	✓	Upgrades/New Equipment		
	15	Boiler: If using a steam boiler, replace it with a hydronic (water) system	✓	Upgrades/New Equipment		
	16	Boiler: Install high efficiency boilers (EnergyStar where available)	✓	Upgrades/New Equipment		
	17	Separate DWH direct-fired boiler (condensing if gas)	✓	Upgrades/New Equipment		
	18	Install high efficiency furnace (EnergyStar where available)	✓	Upgrades/New Equipment		
	19	Insulate all hot surfaces (condensate tank, steam, \$ HW piping)		Annually		
Building Controls	20	Install programmable thermostats in resident units that facilitate precise control of HVAC temperature set points based on weekday and weekend occupancy schedules		Upgrades/New Equipment		
	21	Provide your maintenance staff and residents with guidance on how to efficiently program the thermostats		Annually		
	22	Outdoor Reset Controls for Boilers	✓	One Time Only		
	23	Install roof fan timers (new timers only; per code requirements)	✓	One Time Only		
	24	Install Thermostatic Radiator Valves. TRVs sense the air temperature around them and regulate the flow of water through the radiator which they are fitted to	✓	One Time Only		
Motors	25	Install High Efficiency Motors (if over 1HP and run for more than 4 hours/day)	✓	Upgrades/New Equipment		
	26	Variable Speed Drives (on variable flow motors over 1HP and run more than 4 hours/day)	✓	Upgrades/New Equipment		

Appendix C: Green Lease Leaders

Energy Management Best Practices

Note: this guide corresponds to Credit 6 of the Green Lease Leader application

By implementing energy management best practices in base building systems and common areas landlords can reduce the energy waste and operating costs. Establish guidelines requiring at least five of the following energy management best practices to be implemented in the building(s):

1. *Restricted HVAC hours.* Restrict HVAC hours to the tenants' business hours, with a reasonable amount of extra time to allow the space to reach temperature set point. HVAC operation after hours available upon request.
2. *Space heaters.* Prohibit use of space heaters.
3. *Daytime cleaning.* Schedule janitorial work to occur during regular business hours to reduce time that building HVAC and lighting equipment are utilized.
4. *Air filters.* To the extent managed by tenant, clean and replace air filters as often as recommended by manufacturers. Timely filter replacement can reduce HVAC equipment loads and energy use. Maintaining high indoor air quality can increase occupant comfort and reduce building- related illnesses.
5. *Thermostat set-back/set-up.* Use programmable thermostats or other means to lower heating set point and increase cooling set point during unoccupied periods.
6. *Lighting controls.* Install lighting controls such as occupancy sensors, daylight harvesting, or timers in all non-regularly occupied spaces, including break rooms, storage rooms, and bathrooms.
7. *Plug load management.* Train common area and back-of-house occupants to turn off or unplug lights, electronics, and appliances when not in use and/or provide advanced power strips.
8. *Ongoing maintenance.* Obtain regular (quarterly or annual) inspections of HVAC equipment, exhaust fans, etc., if controlled by landlord.
9. *Energy audit.* Conduct base building and common area energy audits at least annually.

- 10. *Retrocommissioning.*** Conduct base building retro-commissioning periodically, in order to optimize energy consuming systems/equipment.
- 11. *Walk-in refrigerators.*** Inspect walk-in refrigerators for leaks. Install strip curtains and automatic door closures.
- 12. *Vending machines.*** Prohibit vending machines or place on timers.
- 13. *Refrigerant leaks.*** Monitor base building HVAC systems and refrigerators for leaks.

Example Building Guidelines

We are committed to the following energy management practices in our base building systems and common areas:

- 1.** Restrict HVAC operating time to our business hours with ample warm-up/cool-down time to reach temperature set point
- 2.** Prohibit use of personal space heaters
- 3.** Schedule common area building cleaning to occur during daytime hours, allowing non-emergency lighting to be turned off at night
- 4.** Clean and replace air filter as recommended by the manufacturer to ensure equipment efficiency and maintain good air quality, for HVAC equipment that we control
- 5.** Adopt temperature reset practices during unoccupied periods to avoid unnecessary cooling/heating
- 6.** Install occupancy sensors in all non-regularly occupied spaces such as break rooms, storage room, bathrooms
- 7.** Administering trainings or other strategies to turn off lights and appliances when not in use
- 8.** Conduct regular HVAC equipment maintenance to ensure proper operation
- 9.** Conduct energy audits periodically to identify any energy conservation measures

10. Conduct retro-commissioning periodically, in order to optimize energy consuming systems/equipment
11. Inspect walk-in refrigerator door gaskets for leaks and install strip curtains and automatic door closures (if applicable)
12. Prohibit use of vending machines to reduce energy usage
13. Monitor supplemental air conditioning units and refrigeration for leaks

Resources

1. [**Making Efficiency Work For You \(see “Energy Management” on pgs. 10-11\)**](#)

Sample lease language and operation recommendations to demonstrate how landlords can incorporate energy management best practices to lower energy usage.

2. [**Building Innovation Hub: Operations and Maintenance Guide**](#)

Outlines the critical role operations and maintenance play in increasing energy efficiency and adding value for landlords and their portfolios.