



MULTIFAMILY ENERGY EFFICIENCY

Substantial Improvements

Cost: \$5,000-\$20,000/unit

Save: Energy 20-75%; Water 30-75%



Major efficiency investments yield sizable savings, resilience, and significant value. Underwriting the potential savings and providing additional low-cost, long-term capital as part of your mortgage can help finance these improvements.

OVERVIEW

Substantial rehabilitations and gut renovations present an opportune time to comprehensively improve a building's envelope, redesign central HVAC systems, and integrate on-site energy generation in addition to addressing simple and moderate efficiency measures. Large-scale efficiency measures will increase property value and produce long-term cost savings and improve quality of life. In most cases, construction financing will be needed to complete work on this scale, but the marginal cost of high-efficiency investments (i.e. the difference in cost between conventional and high-efficiency equipment) will be lower if system replacement is already part of the scope of work.

- Focus on whole-building insulation and air sealing to reduce the need for large mechanical systems.
- To achieve substantial energy savings (>50percent) while increasing resiliency, install on-site generation.
- This is the ideal time to convert an existing property to meet ambitious Passive House or Net Zero standards.

FINANCING

At this level of investment, a construction loan will most likely be needed to finance the work. Mortgage lenders can incentivize efficiency improvements by underwriting based on energy and water savings for a permanent loan.

SAMPLE SCOPE

- Whole-building insulation
- Air sealing
- Heating system replacement and overhaul
- Window replacement
- Solar photovoltaics
- Combined heat and power (CHP)
- Energy management systems

LEARN MORE

Access our no-cost technical assistance.

Talk to your mortgage officer today or contact:
Elizabeth Kelly, Manager of Sustainability Programs
ekelly@communitycp.com | 646.822.9427

To see how others have brought sustainability to multifamily projects, find our suite of case studies - Sustainable CPC: A Study in Savings at communitycp.com



This list of energy and water measures best suited to a substantial improvement is not exhaustive and not all measures will be applicable to all properties. A qualified contractor, energy auditor, or engineer should be consulted to identify appropriate measures and estimate costs and savings for a particular building.

Measure	Property Type	Non-Energy Benefits	Cost Range	Savings*
Increase Insulation - Wall	Any		\$\$\$\$	4%
Overhaul Building Envelope	Any		\$\$\$\$	20%
Convert to Electric Heat Pumps	Any		\$\$\$\$	30%
Install Solar/Photovoltaic	Any		\$\$\$\$	20%
Repair Extensive Domestic Water Leaks	Any		\$\$\$	N/A
Replace Boiler	Central Heating Boiler		\$\$\$\$	10%
Install Combined Heat and Power	Central DHW		\$\$\$\$	20%
Separate DHW from Heating	Central Heating Boiler & DHW		\$\$\$	5%
Overhaul Ventilation System	Central Ventilation		\$\$\$	3%
Install Energy Recovery Ventilation	Central Ventilation		\$\$	4%

TABLE KEY

- \$ = <\$0.05/sq.ft.
- \$\$ = \$0.05-\$0.25/sq.ft.
- \$\$\$ = \$0.26-\$1.00/sq.ft.
- \$\$\$\$ = >\$1.00/sq.ft.
- = Stewardship
- = Affordability
- = Comfort
- = Performance
- = Safety
- = Quality
- = Health
- = Value
- = Risk Mitigation

* Savings shown in the table represent typical whole-building site energy consumption savings (or water consumption savings where relevant). Actual savings may vary based on existing performance and conditions at a property.

CONSIDER THIS

- Engaging an energy engineer from the earliest design stages ensures that opportunities to improve efficiency are not missed, and that building systems work well together to optimize performance.
- When replacing a boiler with a high-efficiency model, capture further savings through proper sizing and design, installation, control settings, and operation of all system components, including pipes, pumps, radiators, vents, and traps.
- For buildings with electric resistance heating, e.g., electric baseboards or packaged terminal air conditioners (PTACs), convert to electric heat pumps. Heat pumps may be up to three times more efficient than electric resistance heat.
- Upgrading ventilation systems improves indoor air quality as well as energy efficiency. Ventilation overhauls may include cleaning and sealing ducts, replacing fans with high-efficiency motors, installing constant airflow regulators at vents and registers, and installing a demand-controlled ventilation system.
- Improving a building’s envelope through insulation and air sealing reduces heating and cooling loads, allowing for the installation of smaller (and less expensive) HVAC systems.
- Efficiency upgrades should be planned before sizing on-site generation equipment (like solar and CHP) to prevent creating more power and heat capacity than the more efficient building will need.
- CHP or batteries can provide valuable benefits beyond energy efficiency. They can provide back-up power in case of a grid outage or reduce demand charges and allow participation in demand response programs, creating another revenue stream for a property.
- With new mechanical or on-site generation systems, on-site staff may need new training or ongoing support from a qualified maintenance contractor or energy service provider.
- Passive House and Net Zero are high energy-efficiency standards that can produce energy savings of more than 75 percent. Ask an energy engineer about adopting these design standards for a gut renovation or adaptive reuse project.