$24,570
IN
ANNUAL SAVINGS

# SUSTAINABLE CPC: A STUDY IN SAVINGS

## Multi Family Passive House | Low-Rise New Construction

### BUILDING PROFILE

| | |
|---|---|
| Year Constructed | 2013 |
| Size | 4 Floors, 24 Apartments, 90 Rooms, 26,331 Gross Square Feet |
| HVAC System | Hydronic Gas Boilers and Baseboard, Window ACs |
| Utilities Provided by Owner | Heat, Hot Water, Water & Sewer |

This multifamily building boasts ultra-low energy use because it's built to Passive House construction standards. Lower energy consumption results in lower monthly costs for the owner and residents. Measures like continuous air sealing and insulation help to regulate temperature and air quality, while also controlling odor and noise in each unit. These features maximize safety, comfort and affordability for residents, as well as improve the project's bottom line.

### PROJECT PROFILE

| | |
|---|---|
| Loan Type | Permanent Loan |
| Loan Offering | $4.4 million |

### ADDITIONAL LOAN PROCEEDS SUPPORT ENERGY AND WATER EFFICIENCY

Net Operating Income (NOI)
**$106,076**

→

Income with Energy Savings (Adjusted NOI)
**$130,646**

=

Additional Available Loan Proceeds
**$357,467**

### SAVINGS SNAPSHOT

This property spends substantially less on gas heating and hot water than a conventional property, thanks to its super-insulated, airtight envelope, energy recovery ventilation, and solar thermal water heating system.

The low heating load of the building also meant smaller (and less expensive) boilers could be installed, which helped to keep construction costs down.

| UTILITY | CONVENTIONAL PROPERTY ANNUAL EXPENSE ($/APARTMENT) | SUBJECT PROPERTY ANNUAL EXPENSE ($/APARTMENT) | EXPENSE DIFFERENCE |
|---|---|---|---|
| Electricity | $544 | $446 | –18% |
| Gas (Heating & Hot Water) | $1,250 | $324 | -74% |
| **Total** | **$1,794** | **$770** | –57% |

## PASSIVE HOUSE PRINCIPLES

Passive House is a predictable way to deliver affordable, energy efficient buildings. By implementing simple principles, building owners and operators can drastically reduce utility usage while improving tenant comfort, safety, and overall satisfaction.

**Passive House design is based on 5 basic principles:**

1. **Superinsulation** that is thick and continuous around the building envelope
2. **Airtight** barriers to keep conditioned air inside and outside air and pests out
3. **High-performance windows,** often triple-paned, with advanced insulation, frames, and coatings
4. **Balanced ventilation** to ensure an ample supply of fresh air while recycling heat and moisture
5. **Solar gain** management to utilize natural heating and lighting from the sun

## FREQUENTLY ASKED QUESTIONS

**Does Passive House only apply for new construction, or can I retrofit my existing building?**

It is possible to retrofit to Passive House standards and many buildings around the world have already done so. Work with your architect to evaluate whether Passive House is achievable at your property. Even if official certification is out of reach, implementing Passive House principles will result in improved property condition, economics, and tenant satisfaction.

**Are Passive House buildings more expensive to build than conventional buildings?**

There is the possibility of higher upfront cost (5-10%) to build to Passive House standards, but as the cost of supplies decreases and the number of skilled laborers increases, the difference in cost begins to disappear. CPC's underwriting standards recognize the utility savings of energy efficient buildings and provide additional loan proceeds to fund the incremental construction costs.

**Which professionals do I need to help build my project to Passive House standards?**

Look for an architect and contractor who have experience with Passive House, or have worked with other green building certifications. Partner with a Passive House consultant with the experience needed to guide your team through implementation.

**Does my building need to meet Passive House standards to meet other high-performance standards like Net Zero Energy?**

A Net Zero Energy building does not need to be a Passive House and vice versa, but they are complementary standards. Net Zero Energy buildings typically employ on-site renewable energy to offset any energy used – Passive House principles minimize the energy consumption so that Net Zero Energy is within reach.

## UNDERWRITING PRIMER

By understanding Passive House performance and the projected operating cost savings (compared to conventional construction) and including those savings in a loan's underwriting, additional loan proceeds become available to support Passive House projects.

| | CONVENTIONAL | PASSIVE HOUSE | % CHANGE | |
|---|---|---|---|---|
| **Income** | | | | |
| Effective Gross Income | $303,815 | $303,815 | | |
| **Expenses** | | | | |
| Electricity | $13,050 | $10,704 | -18% | Passive House design and construction lowers consumption of gas and electricity |
| Gas (Space Heating & DHW) | $30,000 | $7,776 | -74% | |
| Other Expenses | $154,689 | $154,689 | | |
| Net Operating Income (NOI) | $106,076 | $130,646 | 23% | A higher NOI means this project can support additional debt |
| Debt Service | $92,331 | $113,862 | 23% | |
| Loan Amount | $4,105,841 | $4,463,308 | 9% | Increased loan proceeds help pay for any incremental construction costs |
| Property Value | $1,631,938 | $2,009,938 | 23% | |
| Loan-to-Value | 71% | 75% | | |
| DSCR | 1.15 | 1.15 | | |