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# FLEXIBLE CO-LIVING HOUSING FEASIBILITY STUDY

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Denver, Colorado

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Study done in collaboration  
with Gensler and the  
Pew Charitable Trust

Pew **Gensler**

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# FLEXIBLE CO-LIVING HOUSING FEASIBILITY STUDY

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Page:

**03**

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**Defining the Problem:**

Increasing the supply of low-cost housing

**05**

---

**Denver:**

Existing conditions, regulatory overview, building stock

**12**

---

**Flexible co-living:**

Defining the Program

**13**

---

**Test Fits and Yields**

**17**

---

**Meeting the Market:**

Rent and Users

**19**

---

**Operating Model and  
Financial Feasibility**

# Defining the Problem: Increasing the supply of low-cost housing

Cities across the United States are grappling with a long-term housing affordability crisis. Rising housing costs and a chronic undersupply of affordable housing impact the livelihoods of residents, with significant office inventories remaining vacant and unused. These trends have become more pronounced in the aftermath of the Covid-19 pandemic.

## Housing Affordability and Availability

Nationwide, the median rent reached \$1,411 in July 2024. This is an increase of over 22% since January 2020.<sup>1</sup> Further rent growth has often outpaced wage growth in recent years, worsening affordability. Experts point to chronic undersupply as one of the primary drivers of rising rents. Current regulatory frameworks, policies, and construction typologies are unable to deliver affordable and accessible housing near jobs, transit, and other socioeconomic drivers of economic opportunity, further contributing to increased costs of existing housing as renters compete for limited supply. The number of lower-income renters continues to rise, resulting in renters increasingly priced out of local housing markets.<sup>2</sup>

## Housing Insecurity and Homelessness

With chronic undersupply of housing, and especially low-cost housing, the United States faces housing insecurity and homelessness. In 2023, HUD reported more than 650,000 people experiencing homelessness, a 12% increase from the year prior.<sup>3</sup> Research indicates that homelessness rates are highest in cities with the highest rents, and that homelessness rises when rents rise.<sup>4</sup>

## Vacant Office Stock

While the nation experiences a housing shortage, office occupancy continues to fall as the commercial real estate market responds to declining office demand due to long-term trends and post-Covid demand shifts. National commercial real estate broker CBRE predicts the overall office vacancy rate will rise to around 20% by the end of 2024 as office tenants continue to reduce their space needs.<sup>5</sup> Rising office vacancies threaten the vitality of central business districts and their continued impact on municipal revenue generation, as cities have long relied significantly on commercial property taxes to fund local budgets.

<sup>1</sup> Apartment List July 2024 National Rent Report <https://www.apartmentlist.com/research/national-rent-data>

<sup>2</sup> NLIHC Releases The Gap 2023: A Shortage of Affordable Homes <https://nlihc.org/news/nlihc-releases-gap-2023-shortage-affordable-homes>

<sup>3</sup> HUD January 2023 Point-in-Time Count Report [https://www.hud.gov/press/press\\_releases\\_media\\_advisories/hud\\_no\\_23\\_278](https://www.hud.gov/press/press_releases_media_advisories/hud_no_23_278)

<sup>4</sup> How Housing Costs Drive Levels of Homelessness <https://www.pewtrusts.org/en/research-and-analysis/articles/2023/08/22/how-housing-costs-drive-levels-of-homelessness>

<sup>5</sup> CBRE Office U.S. Real Estate Market Outlook 2024 <https://www.cbre.com/insights/books/us-real-estate-market-outlook-2024/office-occupier>

## Re-Introducing Low-Cost Housing Typologies

The misalignment of housing costs and the housing budgets of renters is worsening, with a record 50% of renters cost-burdened, meaning they spend more than 30% of income on rent.<sup>1</sup> In many cases this is exacerbated by regulatory frameworks that encourage and prioritize construction of market-rate housing that is higher-cost and beyond the means of most renters.

In the mid-20th century, most cities in the U.S. were characterized by an abundance of lower-cost housing typologies, particularly single-room occupancy (SRO) dwellings. Starting in the 1950s, restrictive zoning and building codes and financial incentives resulted in the elimination of SRO's as an affordable housing alternative. Between the 1970s and the 1990s alone, it is estimated that the United States lost one million SRO units to conversions and demolitions.<sup>2</sup>

Through regulatory reform and the reintroduction of lower-cost residential typologies, the supply of lower-cost housing can be increased to meet the current needs of renters.

The reintroduction of flexible co-living residential typologies has the potential to:

- 1) reduce the costs of additional residential inventory,
- 2) increase the supply of available housing to lower-income renters, and
- 3) alleviate some of the negative impacts of long-term demand changes for office properties.

## Expanding the Office-to-Residential Conversion Potential

Central to this solution is the potential for leveraging vacant office stock in city's central business districts, which are already located in transit-accessible and job- and amenity-rich locations. Many of these vacant or underutilized office buildings are being assessed for their potential conversion to housing across the U.S.

Gensler analysis suggests a notable subset of existing office stock is potentially suitable for conversion into market-rate housing.<sup>3</sup> However, many buildings are not economically viable candidates due to configurations that appeal to office tenants, but are incompatible with traditional residential layouts. Large floor plates with little interior natural light, inoperable windows, and the high costs of plumbing and mechanical retrofits all challenge the design and economic feasibility of conversion, particularly under current regulatory frameworks in most cities.



<sup>1</sup>New Report Shows Rent Is Unaffordable for Half of Renters as Cost Burdens Surge to Record Levels <https://www.jchs.harvard.edu/press-releases/new-report-shows-rent-unaffordable-half-renters-cost-burdens-surge-record-levels>

<sup>2</sup>The Rise and Fall of the American SRO <https://www.bloomberg.com/news/articles/2018-02-22/the-rise-and-fall-of-the-american-sro>

<sup>3</sup>What We've Learned by Assessing More Than 1,300 Potential Office-to-Residential Conversions <https://www.gensler.com/blog/what-we-learned-assessing-office-to-residential-conversions>

# Denver: Existing Conditions, Regulatory Overview, and Building Stock

## The State of Housing in Denver

Denver is a rapidly growing city that has experienced rising rents and erosion of affordability citywide. According to Apartment List data, between 2018 and 2024, the overall median rent in the city of Denver increased 18% and is \$1,771 per month as of July 2024.

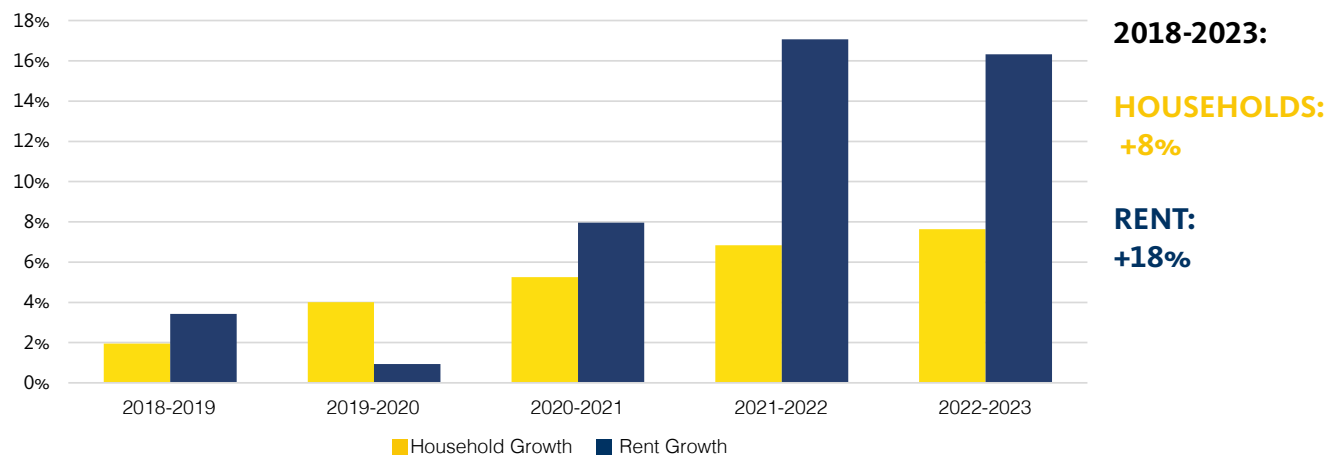
Rising housing costs have contributed to a citywide homelessness estimate of almost 10,000 individuals according to recent estimates conducted by the Metro Denver Homeless Initiative. A rate of 21.2 per 10,000 inhabitants exceeds the national average.<sup>1</sup> Simultaneously, downtown office vacancy rates are approaching an average of 30%.<sup>2</sup>

## The Opportunity

The opportunity to introduce affordable co-living housing in Denver is promising: There are minimal local regulatory barriers that often prohibit flexible co-living residential typologies. Initial conversations suggest that there is notable local political will to encourage new housing typologies, along with other solutions to address housing affordability and rising homelessness and housing insecurity.

Several local programs that support these goals are already underway or in development, and can be leveraged to enhance the viability of this housing model.

## Household and Rent Growth (Cumulative)



<sup>1</sup> HUD Annual Homeless Assessment Report 2023 Point-in-Time Estimates by CoC <https://huduser.gov/portal/datasets/ahar/2023-ahar-part-1-pit-estimates-of-homelessness-in-the-us.html>  
<sup>2</sup> Colliers Downtown Commercial Vacancy Rate Q4 2023 <https://www.colliers.com/en/research/denver/2024-q2-denver-office-market-report>  
 Chart Data Sources: Apartment List National Rent Report (as of July 2024) <https://www.apartmentlist.com/research/national-rent-data>, Esri Business Analyst

# Denver at a glance:



**MEDIAN  
RENT**

**\$1,771**



**HOMELESSNESS  
RATE**

**21.2 per 10k**



**DOWNTOWN  
OFFICE  
VACANCY**

**29%**



**REGULATORY  
BARRIERS**

**LOW**

## Denver Building Code

The City of Denver uses International Code Council (ICC) with Amendments. Currently, 2021 is the base code. Denver has not added amendments to the Building and Fire Code that would restrict the ability to create co-living housing. In situations where existing buildings have stairways too close to each other, the City has an Admin Mod (modification) process, which is used to address existing conditions and hardships.

The building occupancy is Residential Group R-1. R-1 occupancies contain sleeping units where occupants are primarily transient in nature, which includes boarding houses with more than 10 occupants, congregate living facilities with more than 10 occupants, and hotel / motels. The definition of transient varies by the authorities having jurisdiction: Occupancy compliance conversations will be forthcoming during entitlements.

Per Denver Community Planning and Development, the following definition of Congregate “Group Living” also applies. Refer to Section 11.12.2.2 of the Denver Zoning code for more information:

Congregate living encompasses all uses with more people living together than allowed in a single household, but where some type of care is not required. This includes groups of persons who each have separate contracts or agreements with property owners, who do not jointly occupy the entirety of a dwelling unit but who exceed the maximum number of adults permitted in a household as defined in the zoning code. Residents may share sleeping units, and may have shared cooking, bathroom and common areas, or some combination of personal and shared facilities, but do not necessarily occupy a dwelling unit jointly. Tenancy is arranged on a month-to-month or longer basis.

Types of congregate living currently allowed include (but are not limited to):

- Rent-by-the-room configurations, such as rooming and boarding houses or student housing.
- Campus dormitories that house students, including a building used for members of a fraternity or houses officially recognized by a college/university or seminary.
- Permanent tiny home villages.

Where congregate living is allowed:

- Multi-unit residential and mixed use commercial zone districts.
- Congregate living uses are prohibited in single-unit and two-unit residential areas.

Therefore, congregate living is explicitly prohibited in single use and two unit residential areas, but not mixed-use commercial zones.

## Zoning

The buildings studied are within D-C zoning, which is a by-right zone designation with no restrictions around converting from office to residential. Key considerations include:

- 60% of the ground floor linear frontage must be active use (e.g., retail) at the ground floor along named streets, as well as the 16th Street Pedestrian Mall.
- Floor area ratio (FAR) governs development, but existing buildings are grandfathered in. Renovations cannot add gross floor area (GFA) if the building already exceeds its maximum per the zoning designation.

## Affordable Housing Requirements

The City requires residential projects to achieve one of two options in providing affordable housing.

- 10% of total units at 60% AMI or,
- 15% of units at 70% AMI

This study intends to serve a market segment with housing for which the target market-rate rent would likely be below the required income-restricted rent even if no restriction were formally imposed. Because these income and rent restrictions are not binding on the targeted market rent, they should not affect the study's financial viability.

## Green Building Requirements

Projects will need to comply with Denver energy standards, which include electrification of the heating and cooling systems. For adaptive reuse projects, the City is exploring the ability to negotiate relaxed requirements to support conversions.





### Denver Downtown Development Authority Expansion<sup>1</sup>

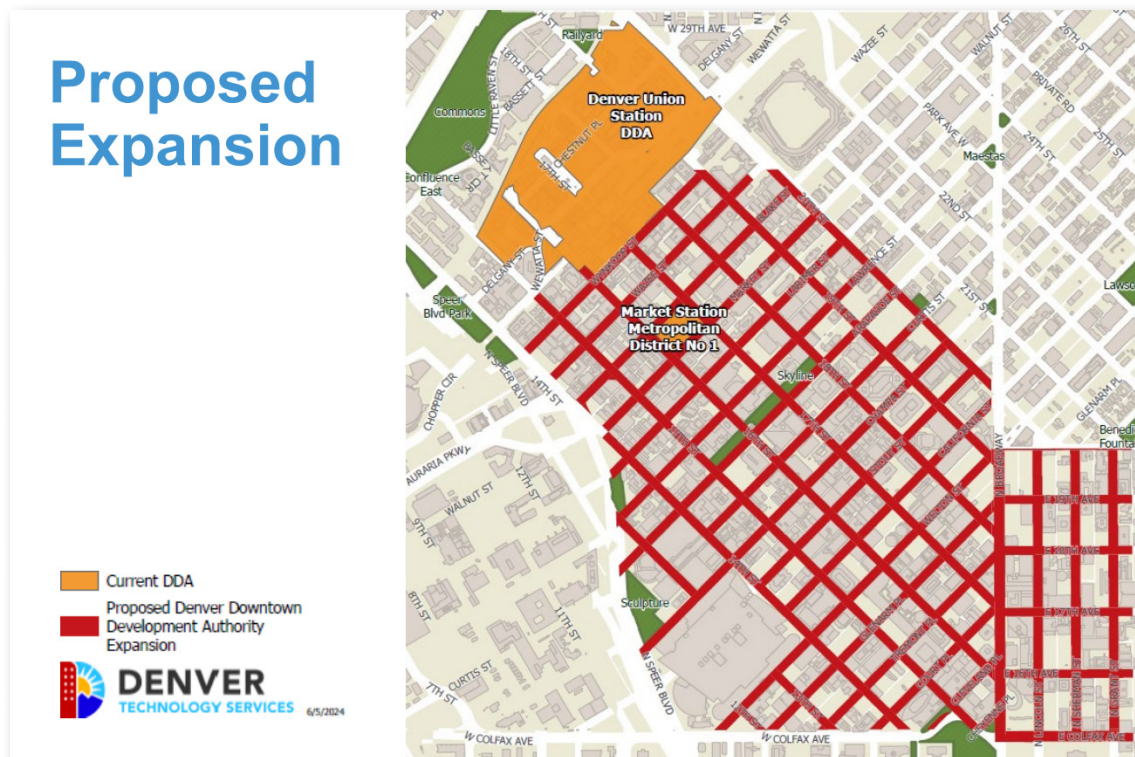
The Downtown Development Authority (DDA) supports catalytic investments that spur economic growth and revitalization in the city’s downtown. It was originally established in 2008 as a special district that leveraged incremental property tax and sales tax revenues to finance the redevelopment of the Union Station Area.

In the fall of 2024, there is a ballot initiative to significantly expand the boundary of the DDA to comprise most of the central business district. It is expected that the expanded district will generate \$500 million in funds to reinvest into the downtown area. Eligible costs include housing and open space improvements, among others.

### Upper Downtown Adaptive Reuse Pilot Program<sup>2</sup>

In the summer of 2023, the City of Denver released its Adaptive Reuse Pilot Program to facilitate conversion activity in its Upper Downtown. The program supports conversions by providing direct assistance to business owners, developers, and property owners through:

- Assigning a dedicated Project Coordinator to guide projects through the City and County of Denver’s multi-agency permitting process
- Expediting applications
- Providing guidance on common roadblocks and challenges, and
- Potentially offering additional local incentives to lessen project time and cost.



Proposed Denver Downtown Development Authority expansion boundary

<sup>1</sup> Amended Denver Downtown Development Authority Plan of Development <https://denvergov.org/files/assets/public/v/1/economic-development/documents/dda/amended-dda-plan-of-development-draft-v3-jul10-24.pdf>

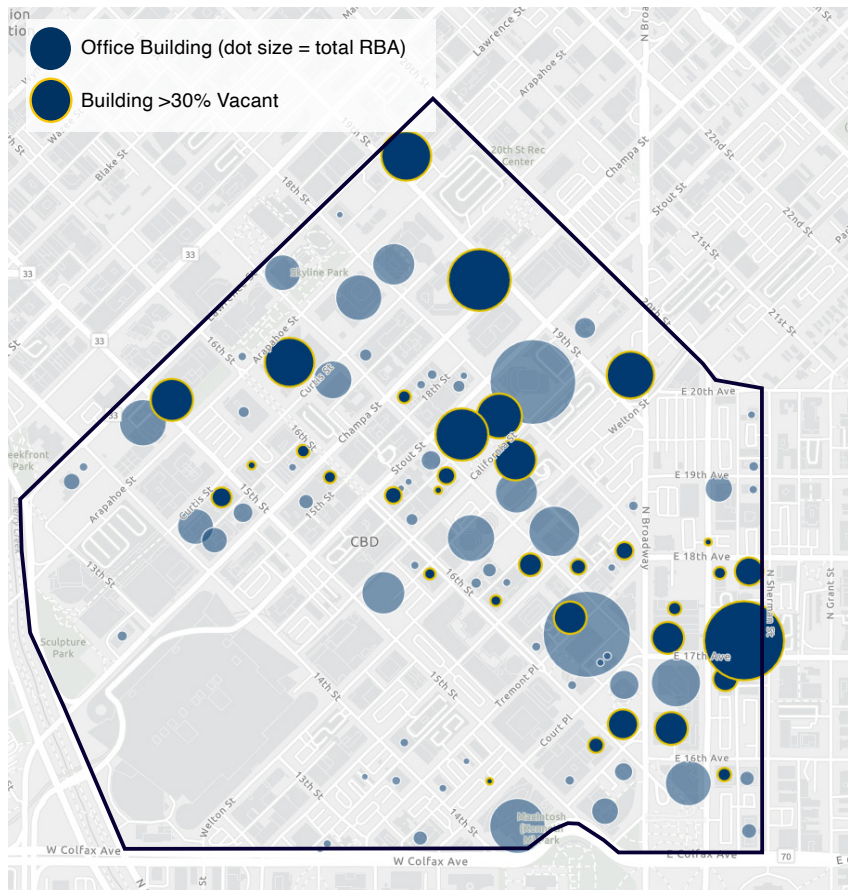
<sup>2</sup> Denver Upper Downtown Adaptive Reuse Pilot Program Fact Sheet <https://denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Community-Planning-and-Development/Denver-Zoning-Code/Urban-Design-Design-Review-Design-Standards-and-Guidelines/Adaptive-Reuse?transfer=9225d2c1-51e0-4901-99d4-dd2f5737b6b3#section-2>

### The Denver Central Business District

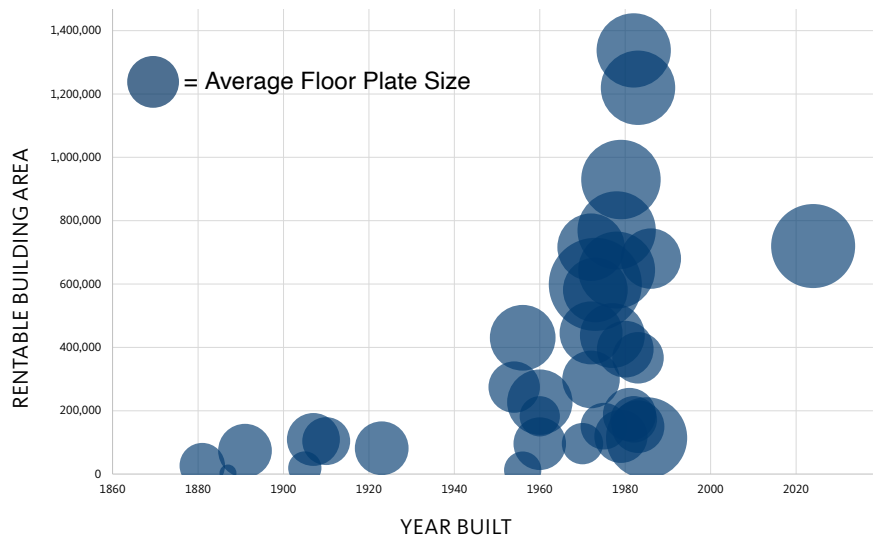
According to data from CoStar, there are approximately 100 office buildings in downtown Denver within the boundary of the Upper Downtown Adaptive Reuse Pilot Program, comprising about 13 million square feet. An estimated 35 office buildings within the boundary are at least 30% vacant. Denver's office stock is relatively homogenous as the majority of buildings were constructed during the Rocky Mountain oil boom and global energy crisis from the late 1970s through early 1980s.<sup>1</sup>

Over the last ten years, there has been one purpose-built office building constructed within the central business district and office inventory has exceeded demand, leaving downtown with high vacancies and an oversupply of dated office stock due to the changing nature of the local economy and added competition from suburban development.

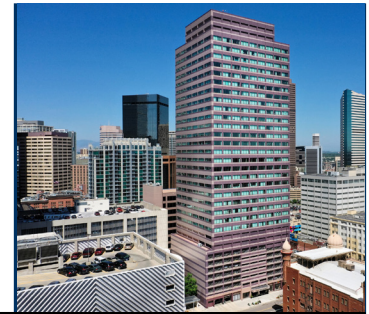
### Denver Upper Downtown District Boundary



### Downtown Office Stock (>30% Vacant)



<sup>1</sup> Denver's Smugness of '70s Gone : Sagging Economy Brings Mile-High City to New Low <https://www.latimes.com/archives/la-xpm-1986-12-01-mn-159-story.html>  
 Chart and Map Data Source: CoStar



>30% VACANT PROPERTIES	TYPE 1	TYPE 2	TYPE 3
% of Building Stock	< 5% of total SF	15-20% of total SF	75-80% of total SF
Age	1900s - 1920s	1950s - Early 1970s	Late 1970s - 1980s
Number of Floors	5 - 8 floors	10 - 20 floors	25 - 50 floors
Average Floor Area Ratio (FAR)	5.0	12.0	12.0
Average Floorplate	9,000 SF	14,500 SF	18,000 SF
Average Vacancy Rate	62%	54%	54%
			<b>DOMINANT TYPOLOGY</b>

### Office Typologies

Denver’s office stock with at least 30% vacancy can be categorized into three primary typologies, as described below, based on attributes such as height, floor plate size, style and year built. These factors, along with other physical attributes such as building depth and window configuration, impact their potential for conversion to traditional, market-rate residential products.

Three typologies of properties experiencing 30%+ vacancy downtown:

**Type 1:** Mid-rise density built between the 1900s-1920s with a smaller footprint and average floorplate of 9,000 SF. These buildings represent less than 5% of the selected inventory.

**Type 2:** Mid-density high rise (10-20 floors) buildings built before 1975. These properties have a slightly larger average floorplate of 14,500 SF and represent 15-20% of the selected office inventory.

**Type 3:** High rise office buildings of 25-50 stories, built between 1975-1985. The average floorplate of these properties is 18,000 SF and they represent 75-80% of the selected office inventory. **Type 3 was selected as the prototype for testing possible conversion feasibility.**

# Flexible Co-Living: Defining the Product

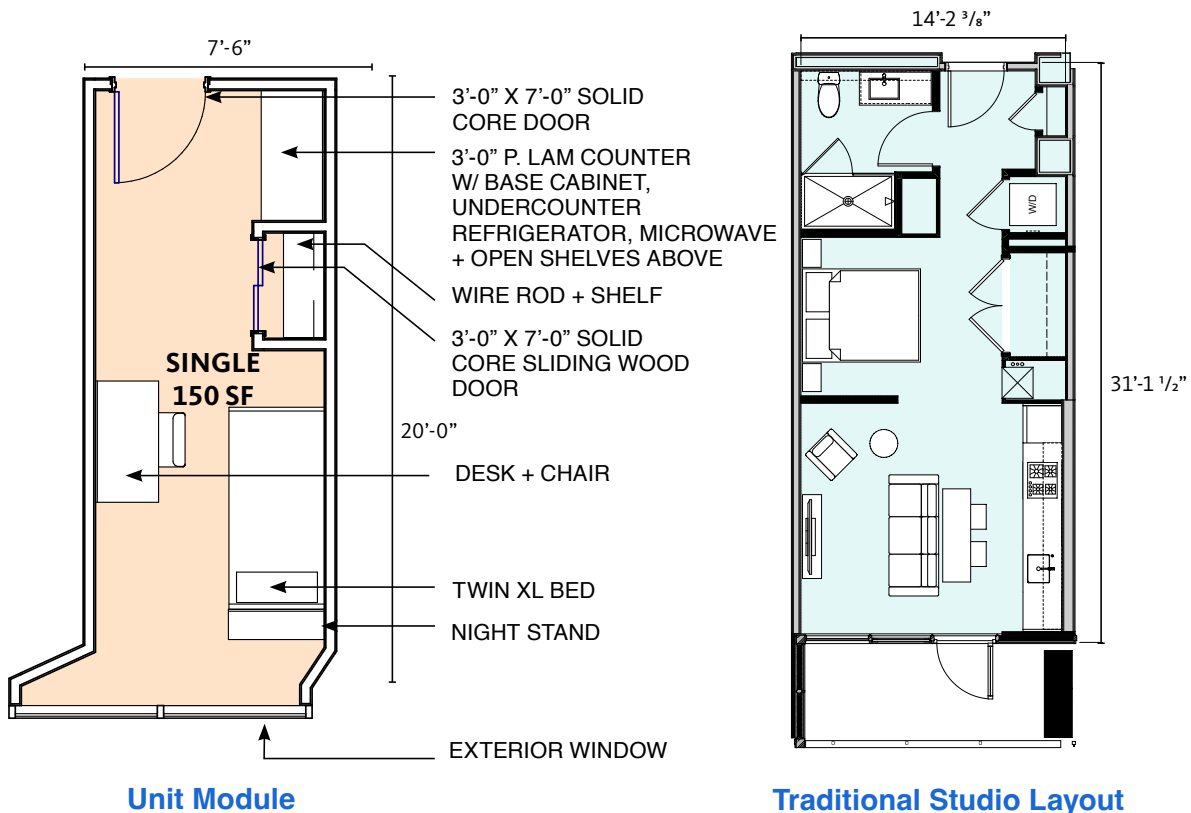
## Program and Unit Module

A program and unit module were developed to align with the project's goals and conform to the City of Denver's building code.

A typical single-occupant sleeping room consists of a private room between 122 SF and 208 SF. In-room furnishings would include a twin XL bed, desk and chair, and nightstand along with a microwave and standard-depth half-sized refrigerator to store personal food and beverage items. A storage shelf and cabinet can be used to store personal belongings. Each sleeping room is secured via a solid core wood door that can be locked by its occupant. Demising walls between sleeping rooms are designed with specifications to ensure the appropriate sound insulation.

To address building layout conditions and to increase the variety of housing typologies, the plan may also accommodate a number of larger units between 259 SF and 285 SF that can each accommodate up to two sets of furniture and storage.

A traditional studio layout of approximately 440 SF is shown as a point of comparison, which includes a full kitchen and bathroom in-unit.



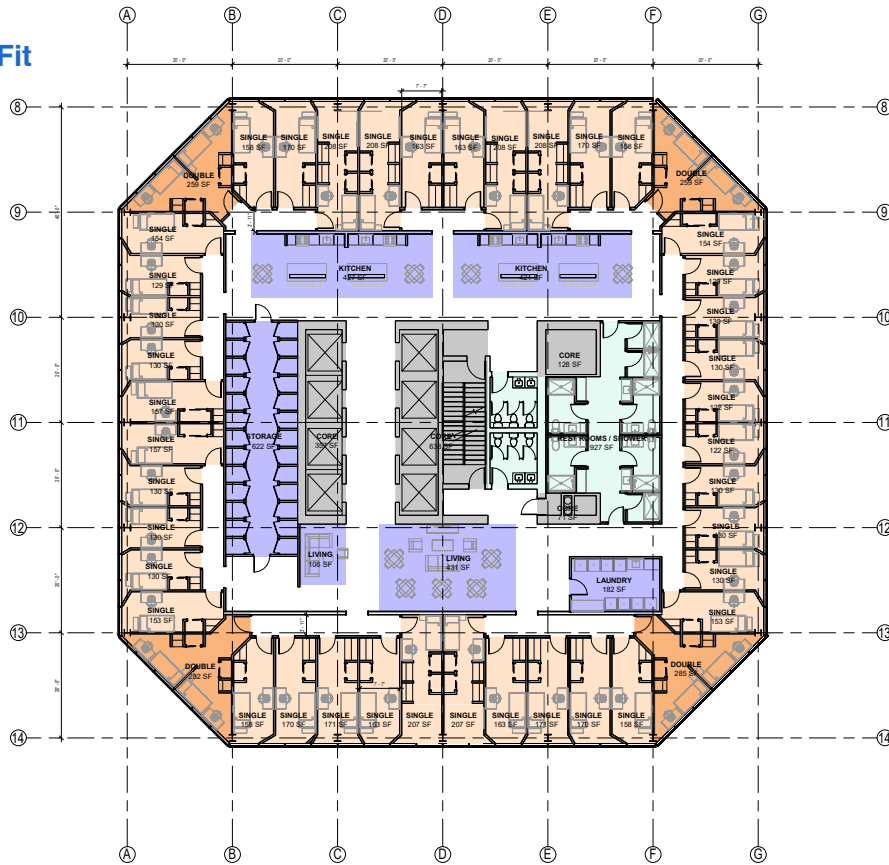
# Test Fits and Yields

## Shared Facilities and Amenity Spaces

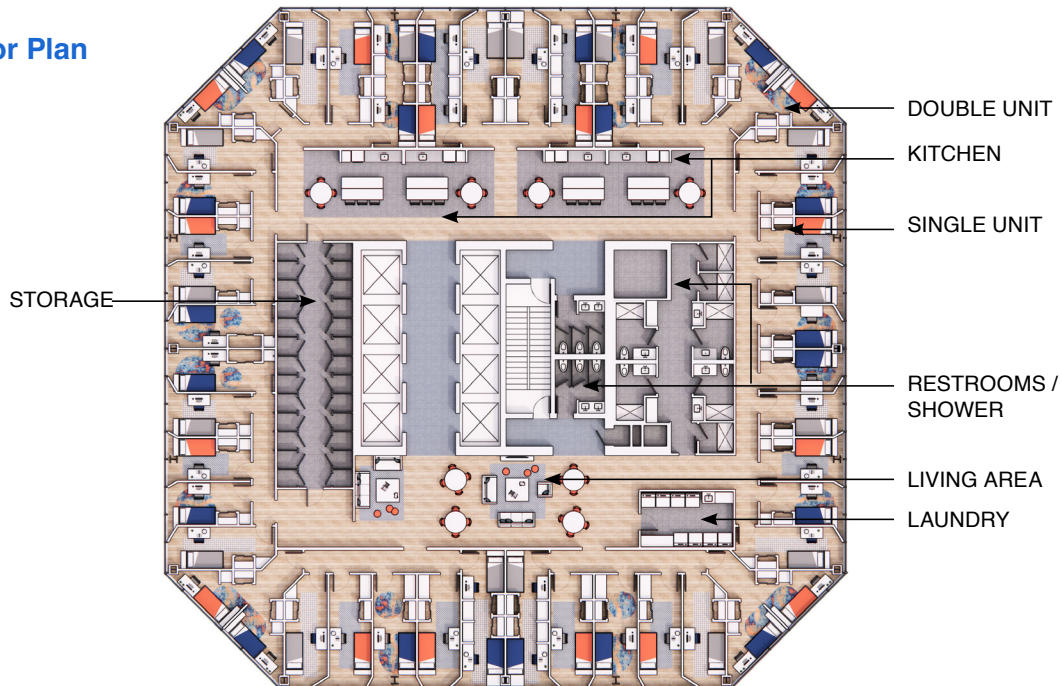
The following shared facilities are provided on each residential floor. The quantities of specific fixtures are driven by required ratios per occupant as defined by building code:

- **Kitchens:** Four shared kitchen areas are included on each floor. Each kitchen area includes standard fixtures and appliances including a sink, electric range/oven, range hood, and microwave. In lieu of a refrigerator in the kitchen area, tenants have access to their individual half-sized refrigerator located in their dwelling unit. There are no code minimums for number of occupants per kitchen facility.
- **Living Room:** There are two shared living areas per floor, accommodating a variety of seating areas including couches and tables.
- **Bathrooms:** Bathroom facilities are shared in the interior of the floor utilizing existing plumbing stacks from the office core. Building codes require one sink per ten occupants, one toilet per ten occupants, and one shower per eight occupants. There are two restrooms with three toilets and two sinks each, in addition to four single-occupant bathrooms and a central shower facility. This facility includes three individual shower stalls and two shared sinks, plus the four single-occupant rooms that each contain one shower, toilet, and sink.
- **Laundry:** One laundry room per floor accommodates four washers and four dryers plus one sink. There are no code minimums for number of occupants per laundry facility.
- **Storage:** A central storage area includes individual double-stacked storage spaces that can be locked.

Typical Floor Test Fit



Rendered Floor Plan



### Yields per Floor

The prototypical building studied has a gross floor area of 13,941 SF. Each floor can accommodate 48 beds across 40 single units and 4 double units, for a total residential area of 10,487 SF per floor. While 34 of the single units range between 122 SF and 171 SF, six of the single units have larger areas between 207 SF and 208 SF due to the orientation of interior hallways. The larger units may be rented at a slight premium to the smaller, more prevalent single units because they offer larger living areas.

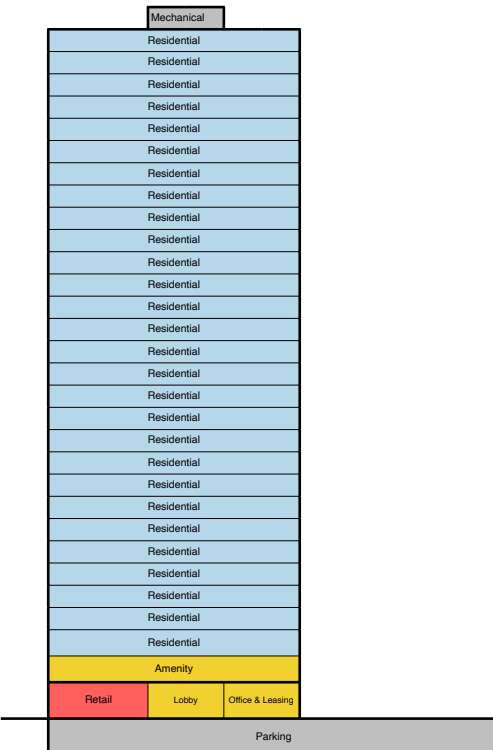
This yield produces a residential efficiency ratio of 70.7%. The remaining 29.3% of the gross floor area is comprised of the shared facilities and the building’s core and interior circulation.

The ratios of shared facilities/fixtures per occupant conform with Denver’s building code regulations.

### Building Summary

The prototypical building studied is 30 floors, excluding the top mechanical floor. The ground floor would consist of a main lobby, a management office, and approximately 6,000 SF of retail space. The second floor contains approximately 10,000 SF of Class B office space plus building-level shared amenities including a fitness center. Parking for 111 cars and 250 bikes is included in the basement level. Floors 3-30 are dedicated for residential use, and each floor would have an identical layout.

Assuming 28 residential floors and 48 beds per floor, the building can yield a total occupancy of 1,344 occupants, or 1,232 units.



STATISTICS	
Residential Area	7,367 GSF per floor
Interior Amenity	2,494 GSF per floor
Gross Floor Area	13,941 GSF per floor
Efficiency	70.7%
Occupants	48 (4 double units, 40 single units)
	294.4 GSF per occupant
Toilets	10 (4.8 occupants per fixture)
Showers	7 (6.8 occupants per fixture)
Sinks	10 (4.8 occupants per fixture)
Kitchens	4 (12.0 occupants per fixture)
Washer/Dryers	4 (12.0 occupants per fixture)

## Building Summary

	Levels	Floor to Floor	OA Height	Units	Parking Spaces	Bikes	Bike Room	Storage	B.O.H Services/ Mech	Common Area	Leasing/ Lobby	Interior Amenity	Retail / Office	Net Rentable Unit Area per Floor	Gross SF per Floor	EFF / Flr	Avg Unit Size
			334.00						SF	SF	SF	SF		SF	SF		SF
Mechanical	31	11.00	323.00						1,500								
Residential	30	11.00	312.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	29	11.00	301.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	28	11.00	290.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	27	11.00	279.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	26	11.00	268.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	25	11.00	257.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	24	11.00	246.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	23	11.00	235.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	22	11.00	224.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	21	11.00	213.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	20	11.00	202.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	19	11.00	191.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	18	11.00	180.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	17	11.00	169.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	16	11.00	158.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	15	11.00	147.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	14	11.00	136.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	13	11.00	125.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	12	11.00	114.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	11	11.00	103.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	10	11.00	92.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	9	11.00	81.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	8	11.00	70.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	7	11.00	59.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	6	11.00	48.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	5	11.00	37.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	4	11.00	26.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Residential	3	11.00	26.00	44				622	1,194	2,264		2,494		7,367	13,941	70.7%	167
Amenity Floor	2	11.00	15.00	0					1,194	2,264		1,749	10,000		13,941		
Ground Floor	1	15.00	0.00	0	0				1,000	1,000	5,941		6,000		13,941		
Basement Parking	B	11.00			111	250	2,500										
	Floors			Units	Parking Spaces	Bikes	Bike Room	Storage	B.O.H Services/ Mech	Common Area	Leasing/ Lobby	Interior Amenity	Commercial	Net Rentable Unit Area	GSF		Avg Unit Size
Totals	31		334	1,232	111	250	2,500	17,416	37,126	66,656	5,941	71,581	16,000	206,276	418,230		167



# Meeting the Market: Rents and Users

## Quantifying the Market for Flexible Co-Living

Initial market research suggests that there is a sizable potential market for the flexible co-living concept. According to data from the American Community Survey, within the City of Denver, half of the city's 350,000 households are renters. Of these 180,000 households, 50% are single-occupant, and only 12% are comprised of four people or more.

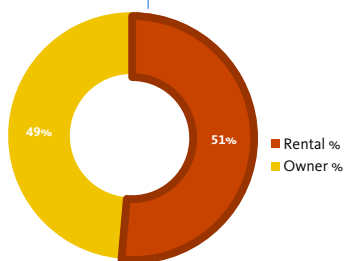
The household incomes of Denver's single-occupant renters are relatively evenly distributed. Approximately 20% or 18,000 single-occupant households earn between \$20,000 and \$40,000 per year.

25% of Denver-area renters are considered severely cost-burdened, meaning they pay more than 50% of their income for rent. 51% of all Denver-area renters spend more than 30% of income on rent.<sup>1</sup>

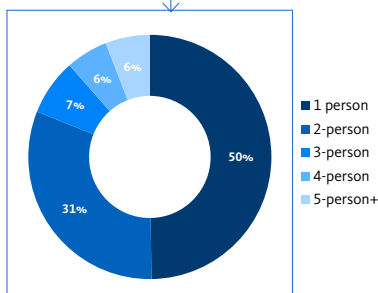
The quantity of single-person renter households earning less than \$40,000 per year, or approximately 40-50% of the Area Median Income (AMI), suggests a sizable market for the flexible co-living typology. The single-occupant model offers a more affordable but market-rate product that aligns with renters' incomes and housing budgets.

**There are 180,000 renter households in the city of Denver and 50% (90,000) of them are Single-Occupant**

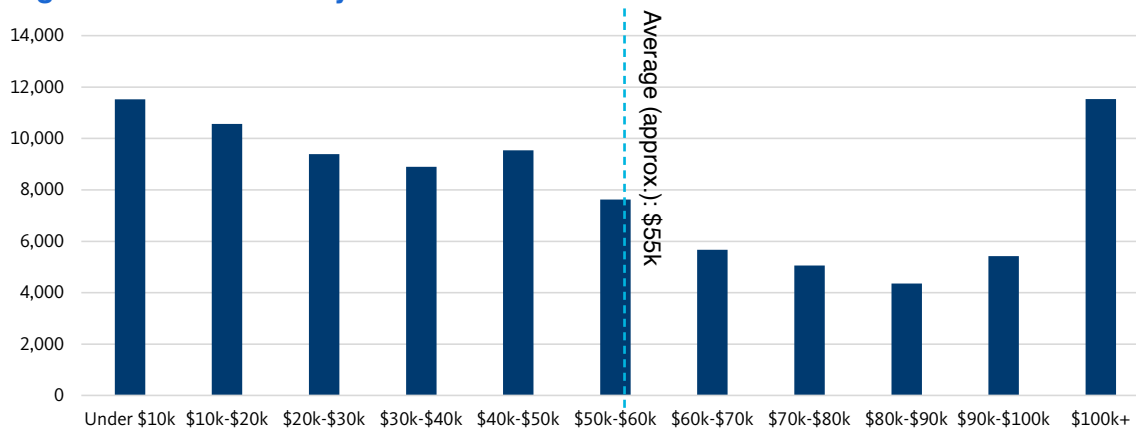
Household Tenure



Renters by Household Size



Single-Person Renters by Household Income



<sup>1</sup> The State of the Nation's Housing, Harvard Joint Center on Housing Studies [https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard\\_JCHS\\_State\\_Nations\\_Housing\\_2022.pdf](https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard_JCHS_State_Nations_Housing_2022.pdf)  
 Data Source: American Community Survey Public Use Microdata Sample (PUMS) 2022 1-Year Estimate  
 Selected geographies: Downtown Denver PUMA; Northeast Denver PUMA; Southwest Denver PUMA; South Denver PUMA; Glendale PUMA.

### Potential Rents

Based on the distribution of single-person renter households in Denver, there are approximately 18,000 individuals who earn between \$20,000 and \$40,000 per year.

HUD standards define a monthly housing budget as 30% of monthly income. Within this income bracket, households have a supportable housing budget of \$500 to \$1,000 per month. A \$500 to \$1,000 monthly housing budget would correspond to approximately 30-50% of local Area Median Income (AMI) levels for single-person households.

The median monthly rent for a market-rate unit in the city of Denver is currently \$1,771. As such, the housing budgets of this segment are far lower than the rents of most existing and available product within the city.

Developing the flexible co-living product at rents between \$500 and \$1,000 per bed per month would meet the target resident’s housing budget in the market and provide an affordable option as compared to other available housing, delivering new supply at a significant discount to other market-rate offerings.

HH Income	Count	HH Income		Monthly Housing Budget (30%)		AMI (Average)
		Low	High	Low	High	
Under \$10k	11,520	\$0	\$9,999	\$0	\$250	<20% AMI
\$10k-\$20k	10,560	\$10,000	\$19,999	\$250	\$500	<20% AMI
<b>\$20k-\$30k</b>	<b>9,390</b>	<b>\$20,000</b>	<b>\$29,999</b>	<b>\$500</b>	<b>\$750</b>	<b>~30% AMI</b>
<b>\$30k-\$40k</b>	<b>8,900</b>	<b>\$30,000</b>	<b>\$39,999</b>	<b>\$750</b>	<b>\$1,000</b>	<b>~40% AMI</b>
\$40k-\$50k	9,540	\$40,000	\$49,999	\$1,000	\$1,250	~50% AMI
\$50k-\$60k	7,620	\$50,000	\$59,999	\$1,250	\$1,500	~60% AMI
\$60k-\$70k	5,660	\$60,000	\$69,999	\$1,500	\$1,750	~70% AMI
\$70k-\$80k	5,060	\$70,000	\$79,999	\$1,750	\$2,000	~80% AMI
\$80k-\$90k	4,360	\$80,000	\$89,999	\$2,000	\$2,250	~80-90% AMI
\$90k-\$100k	5,430	\$90,000	\$99,999	\$2,250	\$2,500	100%+ AMI
\$100k+	11,530	\$100,000	\$1,000,000	\$2,500	\$25,000	100%+ AMI

\$500-\$1,000  
Target Per Bed Rent  
Range

Source: American Community Survey Public Use Microdata Sample (PUMS) 2022 1-Year Estimate  
Selected geographies: Downtown Denver PUMA; Northeast Denver PUMA; Southwest Denver PUMA; South Denver PUMA; Glendale PUMA.

# Operating Model and Financial Feasibility

Baseline project assumptions include industry standard and local market benchmarks to evaluate the feasibility of the project without additional subsidy. The following pages identify various levers that a developer could utilize in order to arrive at marketable returns for levered and unlevered internal rates of return (IRR).

For this project, rents for standard singles are assumed at \$850 per month, which would be affordable for a single-person household earning 38% of AMI. Premium singles are rented at a slight

premium of \$900 per month. Double units are rented at \$600 per bed per month, which would be affordable for a single-person household earning 27% of AMI.

The HUD voucher available to pay for units like these allows rents in Denver up to \$1,229 in the current fiscal year, well above projected rents for this building. For comparison, a typical studio apartment in downtown Denver rents for approximately \$1,420 per month as of August 2024.

## PROJECT OPERATING ASSUMPTIONS

Rent/Bed	Per Month per Person	Annualized
Standard Single Bed	\$850	\$10,200
Double Bed	\$600	\$7,200
Premium Single Bed	\$900	\$10,800
<b>Avg Weighted Rent</b>	<b>\$815</b>	<b>\$9,775</b>
<b>Vacancy/Rent Loss</b>		<b>10%</b>
<b>Total Operating Expenses (OpEx) / SF</b>		<b>\$13.50</b>
Management Fee (%EGI)		2.5%
OpEx Ratio (as a % of total revenue)		38%
<b>Capital Reserves/Unit</b>		<b>\$400</b>
<b>Rent Escalation</b>		<b>3%</b>
<b>OpEx Escalation</b>		<b>3%</b>

## PROJECT PROGRAM

Units Per Floor	44	Beds/ Floor	48
Doubles	4	9%	Doubles 8 17%
Singles	34	77%	Singles 34 71%
Premium Single	6	14%	Premium Single 6 13%
<b>Total Units</b>	<b>1,232</b>	<b>Total Beds</b>	<b>1,344</b>

## OTHER INCOME

Parking Spaces	111 spaces	\$50/month
Bike Spaces	250 spaces	\$10/month
Office SF	10,000 SF	\$18/SF
Retail SF	6,000 SF	\$16/SF

**OPERATING ASSUMPTIONS**

**Rent & Vacancy**

Monthly rents of \$850 per month per person for standard singles, \$900 for larger ‘premium’ singles, and \$600 per month per person for doubles align with the target market’s housing budget and AMI levels of 30-50%. 3% annual rent and operating expense escalation rates align with market benchmarks for this type of product.

Other revenues include \$50/month for car parking, \$10/month for bike parking, a net office rent of \$18/SF and retail rent of \$16/SF to align with market benchmarks.

A 10% average vacancy rate exceeds the average market-rate vacancy rate in Denver, reflecting a risk premium and is in line with typical vacancy rates for similar concepts elsewhere.

**Operating Expenses**

A total annual operating expense cost of \$13.50/SF is based on industry benchmarks for multi-family buildings and includes utilities, repairs, maintenance, management, and insurance. This includes a higher insurance cost to account for higher anticipated insurance premiums associated with the product. Operating expenses as a percentage of total revenue average 38%, higher than typical multi-family benchmarks but reflective of higher operating costs associated with the product.

No real estate taxes have been included at this time.

**Capital Reserves**

Annual capital reserves of \$400 per bed are included to account for capital improvements and necessary unit refresh upon resident move-outs.

**DEVELOPMENT COST ASSUMPTIONS**

**Construction Costs**

Turner Construction Company was engaged to develop construction cost estimates for the prototypical building and test fit studied. The key variables in estimating construction costs are the quality of the building’s existing mechanical, electrical, and plumbing (MEP) systems and the degree of anticipated interior demolition. These are heavily dependent on individual building conditions.

Turner developed a high and low cost range for two existing building conditions. The high range Option 1 assumes selective demolition of all floors and full replacement of HVAC and electrical systems. Option 2 assumes the reuse of existing HVAC and electrical systems plus the reuse of 50% of the existing shell space. In practice, developers are more likely to seek out and prioritize buildings for conversion that have the most intact systems to minimize MEP costs. Thus, **\$246/GSF in hard costs**, within the Option 2 range, is used for modeling purposes. Additional due diligence on a per-building basis would be required to refine cost estimates further.

<b>CONSTRUCTION COST ESTIMATES</b>	<b>OPTION 1</b>	<b>OPTION 2</b>
<i>Selective Demolition</i>	<i>Demo at all floors</i>	<i>50% of existing shell maintained</i>
<i>Hazardous Materials Abatement</i>	<i>Includes abatement allowance</i>	<i>Abatement not required</i>
<i>Fire Protection</i>	<i>Existing systems reused</i>	<i>Existing systems reused</i>
<i>Plumbing</i>	<i>Existing service/stacks reused</i>	<i>Existing service/stacks reused</i>
<i>HVAC</i>	<i>New systems required</i>	<i>Existing systems reused</i>
<i>Electrical</i>	<i>New systems required</i>	<i>Existing systems reused</i>
<b>Construction Cost Estimate</b>	<b>\$291/GSF</b>	<b>\$246/GSF</b>
<i>Low-High Estimate</i>	<i>\$271 - \$320/GSF</i>	<i>\$234 - \$277/GSF</i>

An industry-standard soft cost estimate of 15% of hard costs is included to account for architectural, engineering, permitting, and legal fees. A 5% contingency on hard & soft costs was also added per standard practice. \$5,000 per bed in furnishings, finishes, and equipment (FF&E) is also included.

### Acquisition Costs

Due to the unknown dynamics of a potential development scenario, additional due diligence will be required on a per-building basis to identify a reasonable acquisition cost. Variables that would likely impact property value at the time of purchase include operating income, market cap rates, building condition, and available sales comps.

In addition to property value, there are multiple likely development scenarios for this product typology. These include, but are not limited to: the existing property owner self-develops the conversion; the existing property owner contributes the land as collateral in a joint-venture development; a foreclosed or bank-owned property is purchased by a developer at a discounted purchase price; a potential land swap between property owners; or a standard purchase at market value.

The development pro forma includes a purchase price/acquisition cost of **\$50/GSF or \$21 million**.

### Financing Assumptions

The project assumes traditional debt and equity and no public financing or other forms of assistance. Industry benchmark loan assumptions of 65% loan-to-value (LTV) and a 30-year amortization are used for permanent financing. The remaining 35% of project costs are expected to be sourced through equity.

Interest rates are assumed at 6.0% for permanent financing and 10% for the construction period.

An exit cap rate of 5.75% is assumed during reversion in year 10 with a 3.0% sale commission.

DEVELOPMENT COSTS	TOTAL	PER GSF	PER BED	PER UNIT
Land/Building Purchase	\$20.91M	\$50		
Construction (Hard) Costs	\$102.88M	\$246	\$76,500	\$83,500
Soft Costs (15%)	\$15.43M	\$37		
Contingency (5%)	\$5.92M	\$14		
FF&E <sup>1</sup>	\$6.72M	\$16	\$5,000	
<b>Total Project Costs</b>	<b>\$151.85M</b>	<b>\$363</b>	<b>\$113,000</b>	<b>\$123,300</b>

### PROJECT FINANCING ASSUMPTIONS

Debt Loan-to-Value (LTV)	65%
Equity	35%
Permanent Loan	6.0%
Construction Period Loan	10.0%
Permanent Loan Period	30-Years
Exit Cap Rate	5.75%
Terminal Sale Commissions	3.0%

5-YEAR CASH FLOW (\$ millions)	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Rental Income <sup>2</sup>		13.53	13.94	14.36	14.79	15.23
Vacancy Loss <sup>3</sup>		-5.41	-1.39	-1.44	-1.48	-1.52
Other Income <sup>4</sup>		0.38	0.41	0.44	0.50	0.58
Effective Gross Revenue		8.50	12.95	13.37	13.81	14.29
Operating Expense <sup>5</sup>		-4.69	-4.94	-5.09	-5.25	-5.41
Capital Reserves		0.00	-0.52	-0.54	-0.55	-0.57
<b>NOI</b>		<b>3.81</b>	<b>7.49</b>	<b>7.74</b>	<b>8.01</b>	<b>8.31</b>
<b>Total Before Tax Cash Flow</b>	<b>-164.99</b>	<b>3.81</b>	<b>7.49</b>	<b>7.74</b>	<b>8.01</b>	<b>8.31</b>
Terminal Value (Yr 10), Net Cost of Sale	197.93					
<b>Unlevered IRR</b>	<b>6.4%</b>					
<b>Levered IRR</b>	<b>9.1%</b>					
<b>Equity multiple - Exit year</b>	<b>1.62</b>					

<sup>1</sup> Furnishings, Finishes, and Equipment

<sup>2</sup> Average weighted rent of \$9,775 per bed times 1,344 beds; at a 3% annual escalation

<sup>3</sup> Assumes a 2-year stabilization/lease-up period and a stabilized occupancy of 90%

<sup>4</sup> Total annual retail rent, office rent, parking and bike parking monthly fees. 3% annual escalation.

<sup>5</sup> OpEx is calculated on GSF and includes common area maintenance, operations, insurance, and management fees. 3% annual escalation.

## Returns

The project's feasibility was evaluated by developing an operating pro forma and financial model, employing industry-standard methodologies and metrics.

Two key metrics for assessing project performance are the unlevered and levered Internal Rate of Return (IRR). IRR measures both the project's performance and profitability, indicating the expected return on initial capital investment. Property developers and investors use preferred benchmark thresholds for both unlevered and levered IRRs when evaluating a project's financial feasibility.

Unlevered IRR assesses general project feasibility and does not calculate the impact of project financing. Lending institutions typically review a project's unlevered IRR as part of the underwriting process.

Levered IRR measures an investor's return on their project contribution. Generally, projects with attractive levered IRRs can draw investors by generating sufficient Net Operating Income (NOI) to repay investments. Individual risk tolerances determine an investor's preferred levered IRR thresholds.

## Scenarios

The baseline scenario assumes conservative conditions, including market-rate, undiscounted acquisition costs, traditional market-rate financing, and no local public assistance. In reality, interested developers are likely to pursue a number of strategies to reduce development costs by leveraging programs and other subsidies available to them, often with public subsidy or other support.

The city of Denver has a proactive city government backing significant local funding opportunities through the Adaptive Reuse Pilot Program and the anticipated Downtown Development Authority boundary expansion. As a result, the success of alternative financing and project grants is perhaps more likely here than in other cities.

Public subsidies are typically available as grants or loans. Grants directly offset total development costs, reducing the project's overall cost. Grants effectively lower the required equity and debt, positively impacting both the levered and unlevered IRR.

Public subsidies can also be repayable loans with more favorable debt terms compared to traditional lending, such as a lower interest rate or a higher loan-to-value ratio (i.e. less investor equity is required). These terms can reduce the annual cost of debt service on the loan, primarily impacting levered IRR by leaving more residual cash flow for investor returns.

To test the impact of these conditions on the baseline scenario, three alternative scenarios were developed based on the relative availability and ease of applying for and securing the various potential forms of assistance. Scenario 1 assumes a relatively low effort, while Scenario 3 requires a high degree of coordination with multiple public entities, though still within the range of possibility.

**Scenario 1: No Acquisition Costs**

Alternative Scenario 1 assumes no acquisitions costs. This can be achieved in cases where a building is vacant or underperforming to the point where it no longer provides any value in its current state and is acquired at essentially no net cost to the buyer. Alternatively, municipalities sometimes purchase underperforming properties and donate them to developer entities as a form of public assistance for redevelopment purposes.

**Scenario 2: No Acquisition Costs, Local Grant**

In addition to no acquisition costs, Scenario 2 assumes local assistance in the form of a grant equal to 5% of project construction costs.

**Scenario 3: No Acquisition Costs, Local Grant, Below-Market Financing**

Alternative Scenario 3 assumes no acquisition costs, the local grant, plus below-market financing in the form of a low-interest loan that could be offered to the project through one of several national or local programs. The below-market loan is assumed to offer a 40-year amortization, preferred interest rate of 4.75%, and 75% LTV. This is in comparison to the market-rate 30-year amortization, 6.0% interest rate, and 65% LTV used in the prior scenarios. This form of assistance produces lower annual debt service costs and a higher net operating income.

POTENTIAL SOURCES	TYPE OF FUNDING	SOURCE		UNLEVERED RETURNS	LEVERED RETURNS
No Acquisition Costs	Grant	Local	City agency could purchase a vacant property and sell to developer at no cost;	X	X
Local Grant	Grant	Local	City fund or local funding mechanism such as TIF (Tax Increment Financing)	X	X
Below-Market Financing	Loan	Local, State, or Federal	Low-interest rate loan offered through existing local, state, or federal program (e.g. HUD)		X



<b>SCENARIO 0: \$50/SF Acquisition</b>		<b>SCENARIO 1: No Acquisition Costs</b>		<b>SCENARIO 2: No Acquisition Costs Subsidy Grant</b>		<b>SCENARIO 3: No Acquisition Costs Subsidy Grant 4.75% Debt/75% LTV</b>	
<b>RETURNS</b>		<b>RETURNS</b>		<b>RETURNS</b>		<b>RETURNS</b>	
Acquisition Cost	\$20.9M	Acquisition Cost	\$0	Acquisition Cost	\$0	Acquisition Cost	\$0
Subsidy/Equity	\$0	Subsidy/Equity	\$0	Subsidy/Equity	\$7.5M	Subsidy/Equity	\$7.5M
Total Project Costs Net of Subsidy	\$151.9M	Total Project Costs Net of Subsidy	\$130.9M	Total Project Costs Net of Subsidy	\$123.4M	Total Project Costs Net of Subsidy	\$123.4M
Debt	6.0%/ 30-yr amort	Debt	6.0%/ 30-yr amort	Debt	6.0%/ 30-yr amort	Debt	4.75%/40-yr amort
Unlevered IRR	6.4%	Unlevered IRR	8.2%	Unlevered IRR	8.9%	Unlevered IRR	8.9%
Stabilized NOI	\$7.49M	Stabilized NOI	\$7.49M	Stabilized NOI	\$7.49M	Stabilized NOI	\$7.49M
Levered IRR	9.1%	Levered IRR	13.0%	Levered IRR	14.6%	Levered IRR	18.7%
Equity Multiple	2.24	Equity Multiple	2.87	Equity Multiple	3.15	Equity Multiple	3.92
Stabilized DCR	1.04	Stabilized DCR	1.21	Stabilized DCR	1.28	Stabilized DCR	1.44

### Findings and Implications

Under the different scenarios tested, the project produces an unlevered IRR between 6.4% and 8.9% and a levered IRR between 9.1% and 18.7%. These thresholds approach levels that may indicate feasibility but are highly dependent on individual investor and lender tolerances, portfolios, and preferences. The project may require an additional level of subsidy to attract necessary capital.

Regardless of the return metrics, the flexible co-living concept and model succeeds in its ability to deliver much-needed housing at a lower cost. It is estimated that this concept can deliver a dwelling unit with a baseline construction cost of approximately \$123,300 per unit, while the current cost of constructing a traditional studio unit in the city of Denver may far surpass \$400,000 per unit.<sup>1</sup> If subsidy dollars could be dedicated to this concept, the units produced per dollar of public assistance can greatly exceed what is generated under existing housing delivery models since the cost per bed is less than one-third the cost of building a traditional studio.

Furthermore, the concept provides more opportunities for conversion feasibility from a design perspective. The building’s large floor plate size and significant building depth limit design feasibility for a traditional market-rate office-to-residential conversion, but work well for the co-living model. Supporting the concept could expand the share of convertible office buildings, putting additional properties into productive use that would otherwise remain vacant or underutilized.

As housing affordability continues to erode and downtown office vacancy rates remain elevated, this concept can unlock additional office-to-residential conversion opportunities. Policymakers can consider supporting the implementation of office-to-flexible co-living conversions due to the outsized impact that the concept has on housing production in an area of critical need. If successful, cities will be able to deliver low-cost housing in a much more efficient and cost-effective manner, providing thousands of secure, modern, and attractive homes to our nation’s downtowns.

<sup>1</sup> Gensler benchmark study of studio construction costs, September 2024



## Denver, Colorado

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Study done in collaboration with Gensler and The Pew Charitable Trusts. Funding for this research was provided by Arnold Ventures and The Pew Charitable Trusts.

This research benefitted from valuable insights and feedback from Nadine Maleh of Community Solutions and Alex Armlovich of The Niskanen Center. Although they reviewed drafts of this report, neither they nor their institutions necessarily endorse the conclusions.

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**Pew Gensler**