It Takes a Village:

A Community Approach to Affordable Housing

Jeremy Banes

OUUDS
The University of Oklahoma Urban Design Studio

THE UNIVERSITY OF OKLAHOMA
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It Takes a Village:

A Community Approach to Affordable Housing

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By
Jeremy Banes

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IT TAKES A VILLAGE: A COMMUNITY APPROACH
TO AFFORDABLE HOUSING

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A PROFESSIONAL PROJECT APPROVED FOR THE
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BY

Shawn Michael Schaefer, Chair
Dave Boeck AIA
Francesco Cianfarani, Ph.D.
Shideh Shadravan, Ph.D.

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Introduction: The Why

Home, Justice, and Dignity

I believe that everyone needs a home and a community. That need is perhaps felt more acutely by low- and middle-income households.

Thinking of housing and community could conjure images of a radical hippie cult. Rather, I believe civilization is born out of community and that zero-sum individualism is the radical cult, not to mention unjust and unsustainable. My passion for this project is a reimagining of society in which people are valued for their participation and contribution rather than what they produce or consume.

I see a community-based approach to housing as an opportunity for understanding and healing. Here people of different incomes, backgrounds, races, ages, religions, political opinions, and worldviews might live in cooperation and civility through the complexities of daily life.

I see this project as a place where the young are free to wander the neighborhood, adults and parents have the support and companionship of other adults, the elderly are allowed to age in dignity, and no one fears loneliness or isolation.

The community that embraces its members at all stages of life might see the benefit of investing in sustainable design that the landlord and the renter never would. Designing and innovating for climate change and sustainability just makes sense when thinking about aging and the community the next generation will inherit.

Laboring for the benefit of a community in which we belong, rather than for a few far-off financial institutions, could lead to a new entrepreneurial class freed from rent and wage slavery. With a little command over their own time, normal working people might then find participation in the arts and humanities – the business of civilization.

Affordable homeownership for the many means all these possibilities to me. This project, the formation of urban *intentional communities*, is an attempt to provide not just the basic benefits of stable shelter, but also a strong social support network into the existing urban environment.

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Chapter 1 Defining the Terms

Objectives

The primary objective of this project is to determine if the affordable housing crisis might be addressed within the city of Tulsa with existing vacant or underutilized buildings. Existing commercial and office buildings often have a much lower cost per square foot than the single-family detached homes most common in Tulsa. By function they are also closer to employment and other services, which is more convenient, affordable, and sustainable than commuting ever greater distances to ever newer suburbs. The upfront cost for commercial and office properties can be considerable and will in most cases require an initial community to create an acquisition and renovation plan. Once the community is established it will also need a plan for governing itself. Therefore, the secondary objective of this project is to propose a social framework that might facilitate the formation and establishment of such a community.

Area Median Income (AMI) Metric

Using average income could produce a skewed result when sampling a population. Think of the illustration of taking the average income of people all on the same bus as a sample set of incomes throughout the population. The result would not resemble anything like reality if a single billionaire happened to be on the bus that day. That is why Area Median Income (AMI) is the metric used by the department of Housing and Urban Development (HUD) to give the middle-point of incomes in an area: exactly half of area incomes are above and half are below the median. This mitigates the skew effect that could happen with using average income. Because incomes vary over different geographic areas, household incomes are placed along a spectrum with 100% AMI as its center. This allows the AMI to be relevant to a specific region. The information on household incomes, ratios of renters to owners, number of housing units, and other housing information is obtained from the decennial census and the American Community Survey.

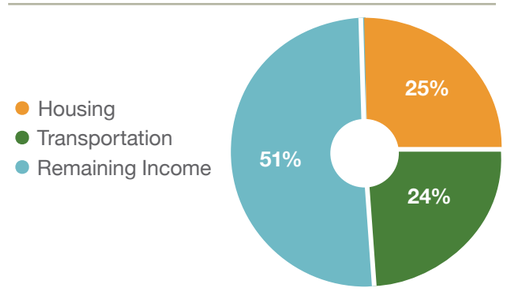
Affordable housing

Housing is considered affordable when it does not exceed 30% of a household's income. A household spending more than 30% of its income on housing is considered "housing cost burdened", and a "severely cost burdened" household spends more than 50% of its income on housing. Therefore, the term "affordable housing" is tied both to the housing market and incomes in a given area.

Affordable housing and transportation

Related to (and inextricably intertwined with) affordable housing is affordable transportation. For transportation costs to be affordable it should be less than 15% of a household budget.

In a city like Tulsa, transportation is the hidden cost of affordability. Evaluating Tulsa based on a combination of housing transportation costs provides a more accurate picture:



Housing and transportation in Tulsa as a percentage of Income (htaindex.cnt.org)

Low- and middle-income households in a heavily car-dependent city are forced to make difficult sacrifices to maintain both housing and transportation because the loss of transportation can lead to loss of employment which then leads to loss of housing.

Problem of affordable housing and discussion of current conditions

Several factors have contributed to the current crisis at many different levels (O'Donnell). A thorough analysis is not within the scope of this project, but I organize the factors here into two broad categories:

Construction Costs:

a. Material costs like the price of lumber
b. Labor shortages

Political:

a. Exclusionary Zoning
b. NIMBY-ism

Construction

Materials like the price of lumber, which is dependent on trade at the national and international level, are not really within the sphere of local power. However, choosing to develop within the city and from existing building stock can help mitigate material costs, and repurposing an aging building is generally cheaper and more sustainable for a city than allowing it to sit empty (attracting crime), deteriorate, and eventually be demolished.

Political

Exclusionary zoning ordinances and land use restrictions, like minimum lot sizes, minimum building area requirements, maximum lot coverage, and restrictions on accessory dwelling units (ADUs), basically prevent many forms of affordable housing in a significant portion of Tulsa's residential zones. The Tulsa Zoning Code has a hierarchy of uses that can allow lower uses, such as residential multi-family in higher use categories such as commercial and office zones. Looking outside of single-family residential zoning could provide more options where rezoning is not required.

NIMBY-ism (Not In My Back Yard) is a more nuanced issue that is often associated with emotion and a negative perception of the unfamiliar. Tulsa is a city comprised largely with single-family detached housing, aging multi-family complexes, and not much else. A prototype could help mitigate negative perceptions, but it would need to be successfully established before it could be an example. Again, looking outside of single-family residential zoning might not encounter as much resistance.

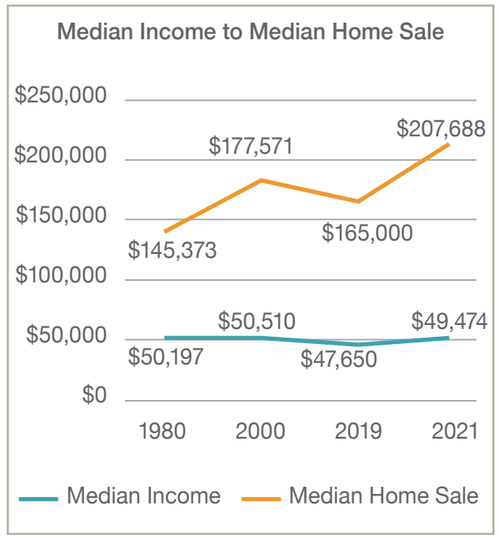
Any of these factors can stall (and sometimes prevent) a project from happening. The larger the scale of a real estate development, the longer the project takes. The saying in real estate goes "time kills all deals" meaning the longer the process from conception to market, the greater the exposure to uncontrollable factors like economic cycles and world events. Therefore, the more controversial the project, the longer the process, and the longer the process, the riskier the project.

The changing role of the federal government has also contributed to the affordable housing crisis. For decades the federal housing authority subsidized the building of housing units. The effect of this top-down and one-dimensional approach has had mixed results on local communities. Nonetheless, the shift toward a more market-based model managed at the state and local level has resulted in a significant reduction in affordable housing inventory. (Buckley 8)

Affordable housing in Tulsa

The most recent data from the 2019 ACS shows City of Tulsa AMI of $47,650. At the cost burden threshold of 30% the annual housing share is $14,295. Dividing that number by 12 months gives us a monthly rent of $1,191. This is for 100% AMI, in other words half of the households in Tulsa are below 100% AMI and the likelihood of being housing cost-burdened increases.

Two factors are at work here that exacerbate the crisis. First, is income stagnation. Adjusted the AMI for inflation to 2019 dollars shows almost no increase since the 1980s. (August 2019 was used because it precedes market disruptions associated with COVID-19.) Meanwhile the median home sale price in Tulsa (also adjusted to August 2019) increased by 42.87%. (Dunn)



Inflation adjusted values for median income and median home sales in Tulsa, 1980-2021 (Dunn).

Second, is the availability of housing units. In 2010 Theron Warlick of the Tulsa Planning Office was interviewed about PlaniTulsa (Tulsa Comprehensive 57). One of its goals was to build 31,000 new units over 20 years to add to the existing 185,574 units then in stock. Many of these new units would be of configurations that would facilitate a more urban and walkable experience (thereby decreasing the transportation cost).

	OWNERS		RENTERS	
	Number	%	Number	%
No bedroom	253	0%	3,185	8%
1 bedroom	1,320	2%	2,600	32%
2 bedrooms	14,059	17%	27,905	35%
3 or more bedrooms	68,376	81%	23,282	29%
Total	**84,008**	**100%**	**80,373**	**100%**

Alternate Data Source Name: 2013-2017 ACS 5-Yr Estimates Data

Table identifying lack of variation in unit types for ownership *(Tulsa Consolidated 126)*

These new units would also provide more varied types of units that are most noticeably lacking for ownership.

By 2017, when just over a third of the 31,000 units in PlaniTulsa should have been added, there had only been a net gain of 1,581 housing units (Tulsa Consolidated 119). The actual numbers are worse than that because the occupancy rate

of housing actually diminished from 88.9% to 87.8% during the same interval. On top of that the population of Tulsa actually increased during these years. These three factors: increasing population, slow growth in housing units, and lower occupancy mean that more Tulsans are living with more people in fewer houses. All these factors driving a shortage of affordable housing were in place before the pandemic. To the shortage of affordable housing and the stagnation in purchasing power described above has now added historic high rates of inflation.

Tulsa housing cost burden

A housing study conducted in 2015 showed that 42.74% of all renters and 20.77% of all owners in Tulsa County were cost burdened by housing. Generally, the further below AMI the household, the higher the cost burden of housing. Indeed, there are about 1300 units in Tulsa for the approximately 4,200 households that qualify for housing assistance (Tulsa Housing 26).

Chapter 2: Proposing a Hypothesis

Community and ownership structure

Choosing to live in housing designed to accommodate community is called co-living. It manifests differently depending on a variety of circumstances, but some models are recognizable such as an artist colony, two three non-related friends sharing rent on a single home, or students living in a dormitory. The idea is based on having some private space, such as a small house or a bedroom, and sharing amenities like kitchen, bathroom, living room, and outdoor spaces while also sharing the upkeep like mowing the lawn, cooking, cleaning, etc. Sharing is potentially less expensive and less time consuming which is potentially a great benefit to low- and middle-income households.

The first concept of co-living analyzed was the housing cooperative. While technically there is nothing in Oklahoma state law that prevents housing cooperatives, several barriers were found. The most relevant barrier, local knowledge, had nothing to do with the law at all. There are not many housing cooperatives across the United States. Most of those are in the northeast of the country with some in the northwest. Very few are in the Midwest and none of them are in Oklahoma. The cooperative's unfamiliarity (and what may be even worse, its association with the east or west coast) seemed likely to risk NYMBY-style type resistance.

A housing cooperative's financial and ownership model poses other risks when adapted to affordable housing. Because the land and the buildings are owned by the housing cooperative, the possibility exists in which a member could be faithfully paying their share and still lose that share (and consequently their home) because other members were not paying (or holding up their end of the deal). This would mean the housing cooperative might not be able to afford to pay the blanket loan on the land and buildings, and the cooperative would face foreclosure. The paying member's recourse can be written into the bylaws; however, the failure of a housing cooperative essentially ends in litigation. This risk could be even greater when the project is focusing on low- and middle-income households because there may not be any wealthier "angels" in the group who can cover the loan payment and save the project. It seemed wiser to look for a model that did not have this everyone or no one potential for disaster.

The search for a better fitting model revealed that condominiums do not have this particular risk of ownership financial structure, but they require similar bylaws that could be written to assist the intention of affordable homeownership. One such requirement would be to restrict the number of rental units (potentially to zero). This would effectively prevent the units from converting to market rate rental units by requiring a well-funded buyer (like a Wall Street firm) to purchase 66% of the units (from the individual owners) to be able to change the rent restrictions in the bylaws.

If a household defaulted on their mortgage, a single unit would be foreclosed upon, but the rest of the community would not be in default. Furthermore, there might be a way for the community to help an individual household through some temporary financial difficulty and keep their home. It seemed better that those members that did not default would keep their affordable units. Though condominiums are underrepresented in Tulsa, the model has the added convenience of being a familiar concept.

It would be hard to account for all of the various factors of different models of housing, but I created a simple matrix of the basic benefits and risks associated with the four models under consideration: three ownership models and the rent model as a base line.

Benefits and risks of types of occupancy

	BENEFITS		RISKS		
	Land Value	Improvement Value	Devaluation	Maintenance	Note
Renting	no individual benefit	no individual benefit	no individual risk	minimal individual costs	
Single-family detached	gains all benefit	gains all benefit	risks all loss	bears all costs	
Housing Cooperative	no individual benefit	no individual benefit	some shared risk	some shared costs	shared ownership of cooperative which owns units and common areas
Condominiums	some benefit	gains all benefit	some shared risk	some shared costs	individual ownership of units / shared ownership of common areas

These models were then given a simple +1 or -1 score based for each of the benefits or risks.

	BENEFITS		RISKS		
	Land Value	Improvement Value	Devaluation	Maintenance	Score
Renting	no individual benefit	no individual benefit	no individual risk	minimal individual costs	-1
Single-family detached	gains all benefit	gains all benefit	risks all loss	bears all costs	0
Housing Cooperative	no individual benefit	no individual benefit	some shared risk	some shared costs	-2
Condominiums	some benefit	gains all benefit	some shared risk	some shared costs	+1

Based on this simple matrix, the condominium model presented the best balance of benefits and risks that would serve low- and middle-income households.

Adaptive reuse of vacant and underutilized buildings

Once an affordable homeownership structure had been selected as well as the strategy of using existing building stock, the search began for a building typology to which it could be best applied.

Multi-Family Apartments
The first and most obvious was the conversion of multi-family apartments into condominiums. The Tulsa area has many examples that are 40 to 60 years old. Conversion could range from minor updates to major renovations, but because it is already housing, material costs could be minimal and zoning would likely not be a problem. The trade off to the larger Tulsa community would be the loss of low-end units, what is called naturally occurring affordable housing (NOAH). Also, the conversion of multi-family rental units into condominiums would not result in a net increase of housing units, and therefore, not alleviate the affordable housing crisis in this area.

Normandy Apartments (Google Maps)

Office/Retail
Two big shifts happened in real estate during the COVID-19 pandemic: first, there was a significant increase in vacancy for office buildings; second, was the significant shortage of housing (though this predated the pandemic). Using a vacancy to solve a shortage is a great strategy and was worth consideration. Unfortunately, office buildings generally do not have the infrastructure to support residential uses. For instance, an office building will might only have two bathrooms on each floor and maybe a kitchen that sees occasional use whereas a multi-family complex will have a much higher density of uses with two bathrooms, a kitchen, and laundry facilities supporting every unit. Office to residential conversion is still a good strategy for use of space, but it is perhaps not a great strategy for affordable housing.

Midway Office Building (Google Maps)

Shopping Mall
The Promenade Mall in Midtown Tulsa was also considered. It has had increasing vacancy for years that was accelerated by the pandemic. It has good transportation access as it is near the I-44 and S-51 highway interchange and is served by the bus route. The Promenade Mall also has a considerable building footprint for its value per square foot. Its variety of spaces for small shops, anchor tenants, and a food court could make it a very interesting mixed-use project, but it would be a massive undertaking. The huge scope of the conversion into affordable housing presents a risk limitation.

Promenade Mall (Google Maps)

Hotel/Motel
Pandemic related travel restrictions and public concern with traveling had a significant impact on the hospitality industry as well. The pandemic also increased the number of meetings and conferences that could be attended online further reducing the reliance on hotel stays. Hotels already have the infrastructure for residential occupancy, so conversion is really a matter of reconfiguring the space from short-term to long-term use. Furthermore, hotels often have space dedicated to amenities and gatherings that would be just as beneficial to a long-term community. Each hotel room could be thought of as a sort of a modular living space that could be connected to make larger units. All these considerations make a hotel to condominium conversion an attractive fit for affordable homeownership.

Tulsa Extended Stay Inn & Suites (Google Maps)

Chapter 3: Data Collection and Analysis

Tulsa Zoning Code

The next stage of the Hotel to Condominium conversion is to explore the Tulsa Zoning Code for compliance issues. The research showed that existing hotels could be found in Commercial, Light Industry, and Office zones, but the sweet spot for a condominium conversion would be in commercial or office zones. .

Sections 35.010, 40.030

	OL	OM	OMH	OH	CS	CG	CH	CBD	CO
Condos Permitted	S	P	P	P	P	P	P	P	P(1)
Hotels / Motels Permitted	--	--	S	S	P	P	P	P	P

(1) Permitted if allowed in approved development plan

Table identifying condominium opportunities in commercial/office zoning

According to Theron Warlick, changes made to the Tulsa Zoning Code over the last fifteen years allowed for condominiums by right almost anywhere a hotel was a conforming use. Not only will a condominium be in compliance with commercial zoning, but it also will less likely trigger NIMBY-style resistance from neighboring properties.

As stated above, transportation is a significant factor for affordability. Therefore, Mixed-Use compliance was also researched to facilitate opportunities for residents to walk to work or start small businesses. This, again, showed that Commercial and Office zoning offered the best opportunities.

	OL	OM	OMH	OH	CS	CG	CH	CBD
Mixed-Use Building	P	P	P	P	P	P	P	P
Vertical Mixed-Use Building	P	P	P	P	P	P	P	P

Table 25.7-5

Mixed-Use Matrix for Condos

		MX1	MX2	M3
Overlay	Pedestrian	--	--	--
	Urban	P	P	P
	Variable	P	P	P
	Flexible	P	P	P

Mixed-Use Matrix for Hotels

		MX1	MX2	M3
Overlay	Pedestrian	--	P	P
	Urban	--	P	P
	Variable	--	P	P
	Flexible	--	P	P

Institutional Mixed-Use

	IMX
Condos	P
Hotels	S

Table identifying condominium opportunities in mixed-use zoning

Building Codes

Tulsa uses the 2015 International Building Code (IBC) which places hotels in the R-1 category and condominiums in the R-2 category. There is significant overlap between the two classifications. The major components for the conversion were in fire protection, interior space, and accessibility..

Fire Protection

Hotels and motels are classified as Residential Group R-1 and apartments are classified as Residential Group R-2 (IBC 310.3-4). The most important design requirement is that, even in an older building, "New Group R occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.8" (Table 506.2 footnote NS.h). Even though this would be beneficial to the future residents, it will still increase the financial constraints of an older building that is not already equipped with a system. If the sleeping units are on grade-floor with windows with areas of a minimum five square feet, then they qualify as emergency escape and rescue openings (1030.2). Because of the small units and the required automatic sprinkler system, the occupant load of individual units should be well below the maximum of ten for a condominium in the R-2 category (1006.2.1). By planning small unit sizes means that the common path of egress would not exceed 125 feet, in which case a single exit is allowed. (IBC 1006.2.1 and 1006.3.2)

Interior Space

A hotel to condominium conversion will likely encounter the minimum space requirements found in chapter 12 of the IBC. These constraints were identified:

1208.1 Interior Space Dimensions

- Habitable spaces (other than the kitchen)
- Minimum 7 ft width
- Kitchens
- Minimum 3 ft clear passageway

1208.3 Room Area

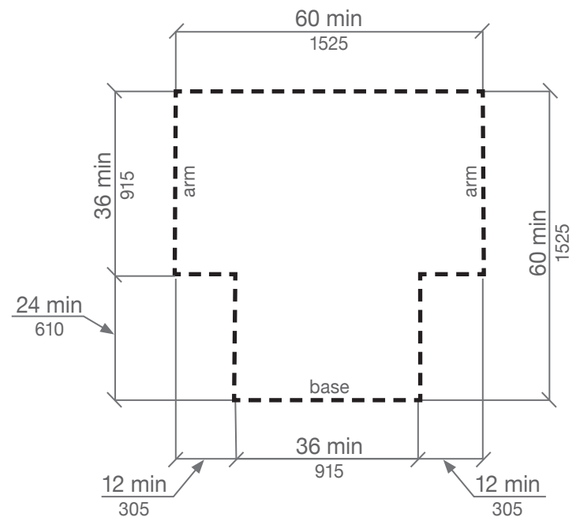
- Every dwelling unit requires one room with 120 sqft
- All other rooms were required to be at least 70 sqft

1208.4 Efficiency Dwelling Units

- Minimum living room greater than 190 sqft
- Separate closet
- Kitchen with sink, cooking appliance, refrigerator
- Separate bathroom with toilet, sink, and bathtub or shower

Accessibility

Hotels are only required to have 20% of units that were accessible (IBC 1107.6.2.2.1). Such a design standard would be acceptable for temporary lodging. However, for residential use it seemed better to design all of the units to facilitate aging in place. This means that no one would have to leave the community just because of disability or limitations associated with aging. The objective of creating affordable housing with this additional constraint means the internal space of the hotel units will have to be reconfigured to be compliant with the Americans with Disabilities Act (ADA). The 2015 building code requires at least one accessible entrance to each tenant facility (1105.1.6). A site with 1 to 25 dwelling units requires an accessible shower that does not have to be roll-in accessible, and sites with 2-50 dwelling units requires a second unit (Table 1107.6.1.1). Again, the plan is to exceed that requirement by designing each unit to be accessible.



T-Shaped Turning Space
(Figure 304.3.2 ada.gov)

Routes and hallways need to be 36 inches wide (ADA 304.3.2 and 403.5.1), and at least one bathroom needs to have 60 inches of turning clearance for a wheelchair (ADA 304.3.1).

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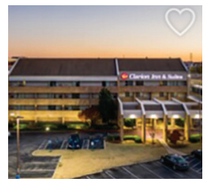
Chapter 4: Tools for Implementation

Site selection

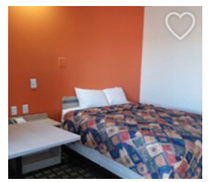
The first major hurdle was finding hotels to convert. Only two were listed on Loopnet.com, the commercial real estate website.

I was personally aware of a handful of vacant hotels that were not listed on Loopnet.com, so the next strategy was to look at Google Maps. Hotels without any vacancy or without pricing information were possible leads, but the process was somewhat haphazard. A better solution was following the money trail. I contacted the City of Tulsa Finance Department that manages the Lodging Tax and asked them for a list of hotels claiming zero occupancy. This produced eight sites, which were researched for value, square feet, and zoning, and then visually inspected.



3209 S 79th Ave E
Clarion Inn & Suites Central I44 Tulsa
Tulsa, OK

$3,900,000
147 Room Hotel
81,556 SF



1021 S Garnett Rd
Nights Stay Hotel
Tulsa, OK

$1,249,000
38 Room Hotel
12,000 SF

Tulsa Hotels Listed for sale (LoopNet.com)

		ASSESSOR	SQFT	PSF	ZONING
Oak Tree Inn 11620 E Skelly Dr, Tulsa, OK 74128	needs to be bulldozed	$1,454,700	89,915	$16	IL
Knight's Inn 5000 E Skelly Dr, Tulsa, OK 74135	OYO south of I-44 on Yale	$1,439,600	140,298	$10	CS
Wyndham Tulsa 10918 E 41 St, Tulsa, OK 74146	closed	$1,765,200	232,530	$8	CO
Crowne Plaza Tulsa-Southern Hills 7902 S Lewis Ave, Tulsa, OK 74136	redevelopment stalled	$1,502,800	167,582	$9	CO
Rodeway Inn & Suites 1737 S 101 E Ave, Tulsa, OK 74128	promising, but building may be worthless	$172,700	27,452	$6	CS
America's Best Value Inn 1016 N Garnett Rd, Tulsa, OK 74116	possibly in operation	$1,537,800	32,724	$47	CS
America's Value Inn 10117 E 11 St, Tulsa, OK 74128	closed	$487,777	62,352	$8	CS
Economy Inn 1036 Garnett Rd, Tulsa, OK 74129	recently bulldozed	$233,800	13,452	$17	CS

Table of potentially vacant hotels with assessed values, price per square foot, and zoning

Of these sites I selected two that seemed promising, but ultimately rejected them both.

The **Rodeway Inn** had a Special Warranty Deed, noise pollution from the nearby the highway, and suspiciously low improvement value. Also, a cell tower had been installed right next to the building which could pose weird limitations on any potential use of the site.

The **Saratoga Inn** looked very promising at first, but physical inspection revealed fire and structural damage in two different buildings. It also had been vacant for many years and had a two-story building without an elevator. Furthermore, I was able to speak with someone connected to the site and found that it was being rehabbed by a sobriety non-profit.

Evaluating all these sites by condition, price per-square-foot, zoning, the county assessor's valuation, and potential for redevelopment helped me reevaluate the opportunities. Putting myself in the position of a novice first time real estate developer revealed another less tangible factor: my personal risk tolerance. As a prototype or proof of concept, the value of having a successful project outweighed the potential rewards from too great of risk.

For this reason, I ultimately chose the **Super 11 Inn** which is an active hotel.

Rodeway Inn (Google Maps)

Saratoga Inn

Super 11 Inn (Google Earth)

Based on the Tulsa County Assessor's records, the cost per square foot was higher than the vacant hotels I researched, but a drive-by inspection showed that one wing was not being used. The hotel needed renovation already, but this was an advantage of sorts. Needing renovation meant the price would be lower, but a conversion to condominiums was going to require renovation anyhow. Plus, the fact that it was in operation meant that there were less unknown variables. This suited my risk tolerance. The Super 11 Inn is zoned Commercial High Density which is one of the most permissive zonings available. The surrounding uses are mostly empty car lots, but this was sort of an advantage too. First, because there were no neighbors to protest. Second, because if the parking could be removed, the courtyard could become open green space for the residents mitigating the negative visuals appeal the surrounding area. Because this was to be something of a prototype, it seemed a fitting strategy to place it where it had the most chance of a successful start rather than where it might fit most logically into the urban landscape. The local vacancies also presented the opportunity of further infill development in the area.

The Super 11 Inn also had the qualifications for daily needs of residents such as transportation and shopping. It is not far from I-244 or SH-169, on the bus route (perhaps even the planned rapid transit line), and only a five-minute drive to the Yale corridor shopping area that has two grocery stores, two pharmacies, a Lowe's, a Target, and many smaller shops and restaurants. The Super 11 Inn was also the same distance to the Tulsa Expo and Fairgrounds and Safari Joe's water park.

Financial feasibility

It would have been most convenient to find a pro forma spreadsheet designed for a hotel to condominium conversion, but one could not be readily found. The remaining choices were to adapt one for this purpose or to build a new one designed for this project. I tried both. Taking an existing pro forma and adapting it created at least as many problems in implementation as it solved in convenience. Eventually, I started with an empty canvas incorporating formulas and structures wherever I could and making up the rest as I went. A description of the pro forma for a hotel to condominium conversion follows. Rather than going through each cell and formula in the spreadsheet, I have here given the basic structure and plan of the sections. The intent being to show the basic structure without the slog through minute details.

Super 11 Inn to Condo Redevelopment

Hard Costs	
Unit Count	46
Building (SF)	14,570
Site (SF)	57,236
Acquisition Cost	$ 428,700
Cost Per Door	$ 9,320
Rehab Budget	$ 992,125
Reno Budget	0
Total Hard Costs	**$ 1,420,825**
Soft Costs	
Architecture/Design	$ 28,417
Site Work	$ 21,312
Total Soft Costs	**$ 49,729**
Total Budget	**$ 1,470,554**
Loan Term	3
Interest Rate	4.85%
LTV	90%
Loan Amount	$ 1,323,499
Equity Required	**$ 147,055**

This section provides an overview of the basic terms of the project.

Cost estimate for conversion into housing

Lots of ideas are included later in the site plan; however, the rehab plan is the estimate just for converting hotel units into dwelling units.

Rehab Plan (Habitability)

Units	46
Estimate (SF)	14,570
Rehab (PSF)	$ 68.09
Rehab Cost p/Unit	$ 21,568
Total Rehab Budget	**$ 992,125**

Acquisition profile

This section sorts the square footage into residential uses and non-residential uses. The building footprints were taken from the Tulsa County Assessor's webpage; however, the unit sizes were estimated assuming a standardized 12-foot by 22-foot unit (264 square feet). This estimate produced a square footage remainder that is incorporated into the non-residential total and accounted for in the gold highlighted cells.

Buildings at Acquisition

Residential Buildings	**Units**	**SF**	
Courtyard 1	6	1,672	
Courtyard 2	11	3,058	
Courtyard 3	19	5,192	
Courtyard 4	10	2,904	
	0		Adjusted residential due to estimation
Residential Total	46	12,826	12,144
			Remainder due to unit estimation
Non Residential Buildings		**SF**	682
Office		1,216	
2 Rooms		528	
			Adjusted non-residential total
Non Residential Total		1,744	2,426
			Adjusted site total
Site Total		14,570	14,570

Operating expenses

These are per square foot cost estimates based on other pro formas. The Capital Improvement Project (CIP) fund is for future improvements. Because this project is about affordable homeownership, the goal is to keep the conversion cost low while providing continuous funding for future development of the site as the community evolves over time.

Association dues

I allow some flexibility in the spreadsheet for calculating the dues by having both a flat per unit rate and a per square foot rate that can be used together or separately. The calculation used for this project is meant to cover the operating costs listed above. It is assumed that the community will contribute their labor to help keep the costs down, but the fees also have a strong reserve fund and future improvements fund built into them.

Operating Expenses (PSF)

Taxes	
Insurance	$ 0.90
Utilities	$ 1.48
Electric	$ 0.07
Landscaping	
Management	
Maintenance	$ 0.30
Janitorial	
Contract Services	
Development Fee	
Misc	$ 0.15
Reserves	$ 0.07
CAM	$ 1.75
CIP	$ 0.10

Association Dues

(PSF)	$ 0.15
p/Unit	$ 250

Unit mix at conversion

This is a summary for calculations on the Affordable Housing (AH) Strategy figure below. Again, the unit sizes are estimated in 264 square foot increments.

Unit Mix at Coversion

	1+1	2+1	3+1.5 (S)	3+1.5(L)	Total
Doors	18	4	7	2	31
Size (SF)	264.0	528.0	528.0	792.0	12,144
Price (PSF)	$ 117	$ 117	$ 117	$ 117	
Full Unit Price	**$ 30,888**	**$ 61,775**	**$ 61,775**	**$ 92,663**	**$ 1,420,825**
Monthly Dues	$ 290	$ 329	$ 329	$ 369	
% AMI 15-Yr Loan	66.8%	112.7%	112.7%	158.5%	
% AMI 30-Yr Loan	58.9%	96.8%	96.8%	134.7%	

Population estimate

This maximum estimate is based on the configurations above with the small three-bedroom unit having two children and all other bedrooms assuming up to two adults.

Population Estimate

Adult Units	18	8	7	6
Children Units			14	
Maximum w/Partner	36	16	14	12
Total	**Min**	**53**	**Max**	**92**

Parking requirements

This is calculated from the Tulsa Zoning Code for condominiums in High-Density Commercial, in which this site is located, and multiplied by the unit configurations (Table 55-1 page 55.3).

Parking Requirements

	Units	Ratio	Required
0-1 Beds	18	1.0	19.8
2+ Beds	13	1.75	22.75
Total			**43**

Affordable housing strategy

By entering the Area Median Income (AMI) this section will calculate:

1. Income Ranges as defined by HUD
2. Annual Housing costs at 30% of each income range (housing cost burden)
3. Monthly Payment Range to be used in the Mortgage Calculations below.

In this way the AMI can be updated when new data is available, and the pro forma will update all the sections.

AH Strategy

Income Range

>80-100% AMI	$ 38,120	>	$ 47,650
>50-80% AMI	$ 23,825	>	$ 38,120
>30-50% AMI	$ 14,295	>	$ 23,825
0-30% AMI	$ --	>	$ 14,295

Annual Housing Cost (30% Income)

>80-100% AMI	$ 11,436	>	$ 14,295
>50-80% AMI	$ 7,148	>	$ 11,436
>30-50% AMI	$ 4,289	>	$ 7,148
0-30% AMI	$ --	>	$ 4,289

Monthly Payment Range

>80-100% AMI	$ 953	>	$ 1,191
>50-80% AMI	$ 596	>	$ 953
>30-50% AMI	$ 357	>	$ 596
0-30% AMI	$ --	>	$ 357

Mortgage calculations 15-year and 30-year

These are standard payment calculators for each of the configurations. A line below each calculator reflects how the monthly payment compares to the housing cost burden calculated above in the Affordable Housing Strategy.

Mortgage Calculations 15-Year Loan Term

Summary Information	1+1	2+1	3+1.5(S)	3+1.5(L)
Loan Amount	$ 30,888	$ 61,775	$ 61,775	$ 92,663
Loan Interest Rate	4.20%	4.20%	4.20%	4.20%
Life Loan (years)	15	15	15	15
Number of Payments per Year	12	12	12	12
Sum of Payments	$ 41,684	$ 83,369	$ 83,369	$ 125,053
Interest Cost	$ 10,797	$ 21,593	$ 21,593	$ 32,390
Total Number of Payments	180	180	180	180
Taxes	$ 37	$ 75	$ 75	$ 112
Insurance	$ 238	$ 475	$ 475	$ 713
Payment per Period	$ 232	$ 463	$ 463	$ 695
Association Dues	$ 290	$ 329	$ 329	$ 369
Total Monthly Payment	**$ 796**	**$ 1,342**	**$ 1,342**	**$ 1,889**
% AMI	**66.84%**	**112.68%**	**112.68%**	**158.53%**

Mortgage Calculations 30-Year Loan Term

Summary Information	1+1	2+1	3+1.5(S)	3+1.5(L)
Loan Amount	$ 30,888	$ 61,775	$ 61,775	$ 92,663
Loan Interest Rate	3.40%	3.40%	3.40%	3.40%
Life Loan (years)	30	30	30	30
Number of Payments per Year	12	12	12	12
Sum of Payments	$ 49,313	$ 98,626	$ 98,626	$ 147,939
Interest Cost	$ 18,425	$ 36,851	$ 36,851	$ 55,276
Total Number of Payments	360	360	360	360
Taxes	$ 37	$ 75	$ 75	$ 112
Insurance	$ 238	$ 475	$ 475	$ 713
Payment per Period	$ 137	$ 274	$ 274	$ 411
Association Dues	$ 290	$ 329	$ 329	$ 369
Total Monthly Payment	**$ 702**	**$ 1,153**	**$ 1,153**	**$ 1,605**
% AMI	**58.89%**	**96.80%**	**96.80%**	**134.71%**

Construction loan

An interest only construction loan best fit for this type of project. The loan will cover the acquisition cost and renovation budget at interest only. The anticipated finish construction is at the end of year one with half of the units sold by the end of year two and the remaining units sold by the end of year three.

Super 11 Inn to Condo Redevelopment

Loan Data			Annually
Principle	$ 1,323,499	Taxes	$ (19,227)
Loan Terms (Years)	3	Insurance	$ (8,496)
Annual Interest Rate	4.85%	Debt	$ (64,190)
Payments per Year	2	Total	$ (91,913)
Interest Only Payment	$ (32,095)		

Final estimates of rehab

This is based on Uniformat estimates. Most of the estimates are on a per-square-foot of the Gross Floor Area; however, some cells (in blue) are based on a per unit or other metric.

I added a failsafe switch so the spreadsheet will not calculate anything at all unless every line has been given a “yes” or “no”.

This pro forma spreadsheet was specifically applied to the Super 11 Inn as that is the project under consideration. However, this tool was intentionally designed with flexibility to adapt the conversion of other existing buildings into affordable homeownership opportunities.

Summary of Rehab

Gross Floor Area (GFA)	14,570
Total Renovation Budget	$ 992,125
Renovation PSF	$ 68.09

Sample section of rehab calculation

Roofing					**$ 42,544**	**$ 2.92**	**5.78%**
Roof Coverings	1	14,570	SF	2.92	$ 42,544	$ 2.92	
Roof Openings	0	0	EA	749	--	--	
Interior Construction					**$ 98,786**	**$ 6.78**	**13.42%**
Partions	0.54	7,867.8	SF	5.55	$ 43,666	$ 3.00	
Interior Doors	0	104	EA	530	$ 55,120	$ 3.78	
Specialties	0	0	Lot	12,487.85	--	--	
Staircases							**0.00%**
Stair Construction	0		FLT	5,750	--	--	
Stair Finishes		0			--	--	
Interior Finishes					**$ 90,604**	**$ 6.22**	**12.31%**
Wall Finishes	0.81	11,801.7	SF	2.59	$ 30,566	$ 2.10	
Floor Finishes	0.69	10,053.3	SF	3.74	$ 37,599	$ 2.58	
Ceiling Finishes	0.77	11,218.9	SF	2	$ 22,438	$ 1.54	

Hazardous Compounds Abatement 1	50,000	$ 50,000	$ 3.43	
Building Trade Cost without Design Allowance		$ 672,627	$ 46.17	100.00%
Design Allowance	10.00%	$ 67,263	$ 4.62	
Building Trade Cost		$ 739,890	$ 50.78	110.00%
Overhead & Profit		$ 100,894	$ 6.92	13.64%
Overhead	10.00%	$ 67,263	$ 4.62	
Profit	5.00%	$ 33,631	$ 2.31	
Building Construction Cost without Inflation		$ 840,784	$ 57.71	123.64%
Inflation Allowance	3.00%	$ 25,224	$ 1.73	3.00%
Contingency	15.00%	**$ 126,118**	**$ 8.66**	15.00%
Building Construction Cost (BCC)		**$ 992,125**	**$ 68.09**	141.64%

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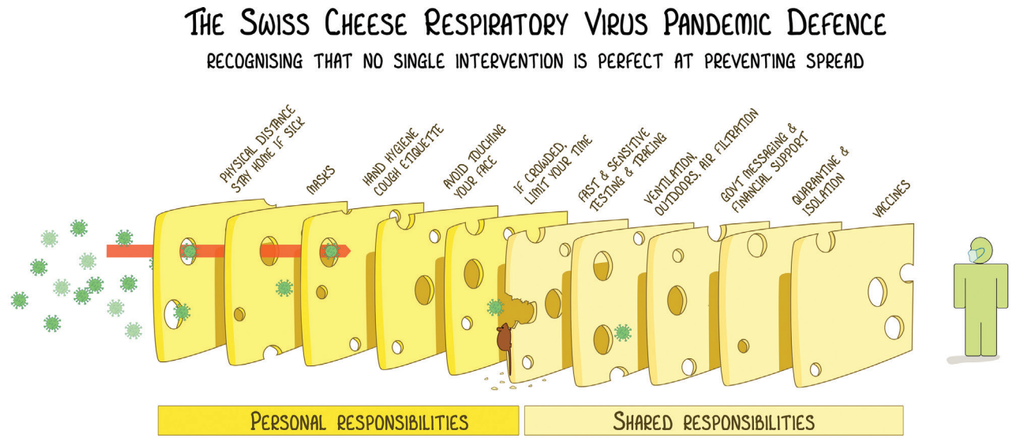
Chapter 5: Layers



Layered defense approach (Mackay)

Layered defense approach (Mackay)

When applied to virology the “Swiss cheese” defense means that no single action is perfect but that with each layer employed the risk of infection is lowered. Housing security for low- and middle-income households could benefit from a similar approach; therefore, the structure of this project has been organized into layers that overlap with the built environment.

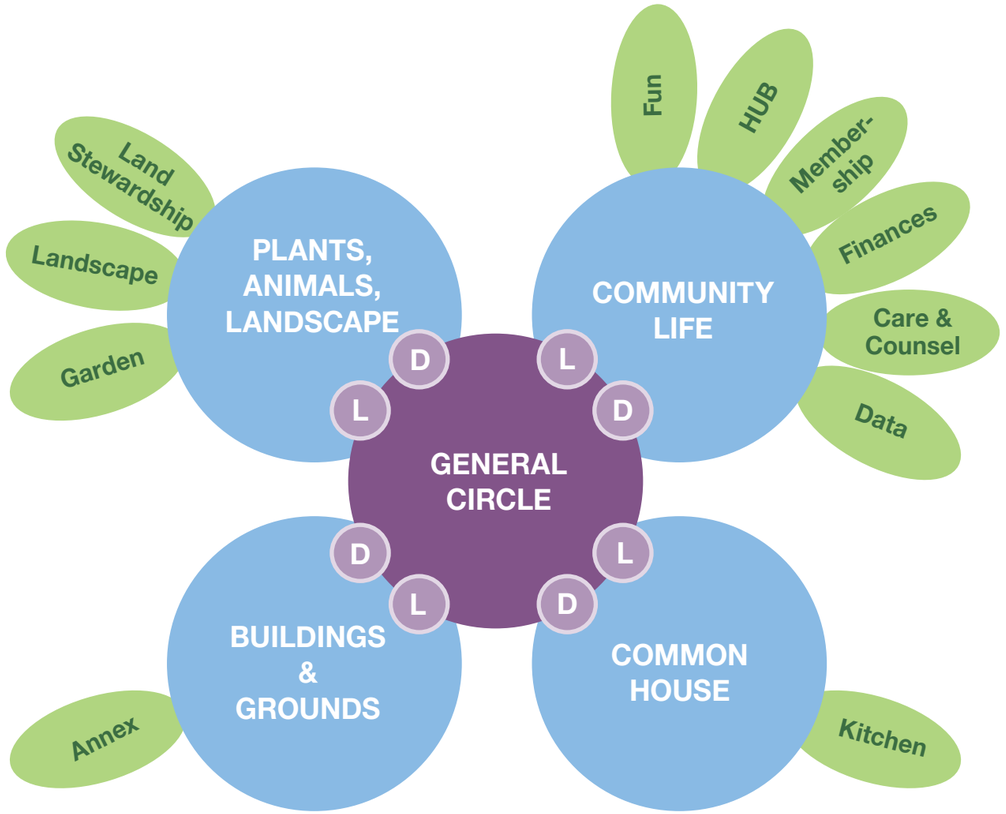
These layers are not meant to be independent things associated with a particular property. Aspiring to good design, each layer is meant to contribute a positive relationship with the other layers so that all taken together support the whole composition. The intent is that these strategies be taken together to create communities that are small enough for each individual to be valued and large enough for the entire to be resilient.

Empowerment Layer

I start with what I call the Empowerment Layer because the forming of community can and should precede the creation of the urban form. The empowerment layer is meant to help answer two questions: “How does a community make decisions?” And “How does a community get things done?”

Sociocracy

Sociocracy is a form of governance that is meant to be dynamic. It starts with the belief that everyone has value, and everyone should be heard. Sociocracy avoids both troubles of decision making by consensus: the tyranny of the majority that can get their way regardless of the objections of the minority, and its opposite trouble of the minority having enough votes to block any decisions at all.



Circles and sub-circles distribute decision making power in the Pioneer Valley Cohousing Community (Pioneer)

Sociocracy puts the power of decision making in everyone's hands.

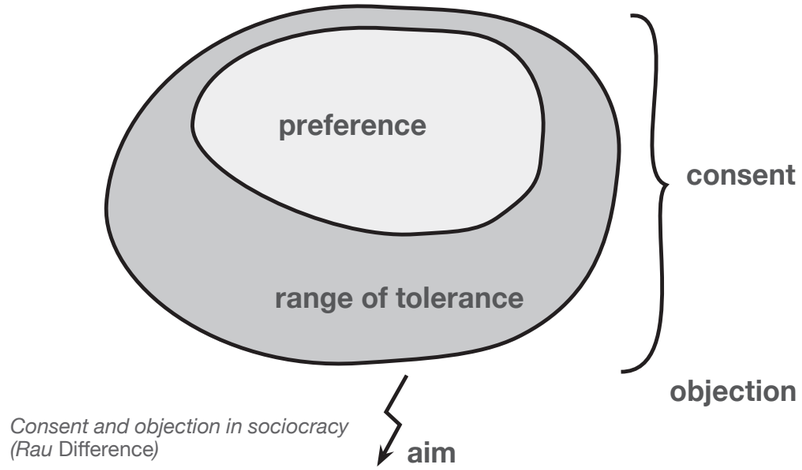
"Those who associate together, govern together"

—Rau Heart

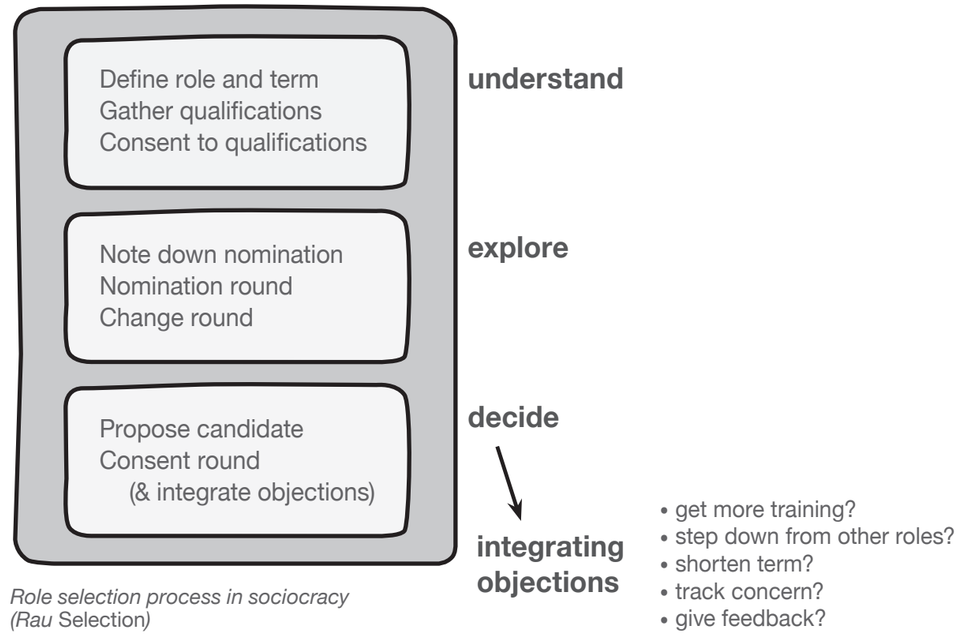
Circles

In sociocracy, a system of circles is used to delegate decision making. A small circle is created with an Aim and Domain. The Aim is the circle's purpose or objective to accomplish. The Domain is that area in which the circle has authority to make decisions. The parent circle does not make individual decisions but decides on the creation of circles with their Aim and Domain and elects the leader of each circle. The leader is elected by the parent circle by nomination because "the best person for the job does not always volunteer, and the person who volunteers is not always the best person for the job" (Rau Heart). The small circles make almost all the decisions in sociocracy.

This system of shared power between many small groups of people is meant to get many issues past deliberations and into actions while giving a voice to everyone. Decisions are made by consent, objection, or consent with objections. When a



Consent and objection in sociocracy (Rau Difference)



Role selection process in sociocracy (Rau Selection)

member of the circle objects it is not a matter of personal taste but means they believe consenting to a proposal will frustrate the Aim of the circle. Objections are ways to reveal opportunities to improve future proposals. In this way a proposal can be decided, implemented, observed, and revised. There is a motto for decision making in sociocracy: "Is it good enough for now? Is it safe enough to try?" (Pearle)

A circle's leader is responsible for the operation and execution of the circle's aim, the facilitator handles meeting logistics, the secretary takes and publishes the meeting minutes for the larger

community, and the delegate, along with the leader, represents the small circle in the parent circle. The first link between the parent circle and the small circle is the elected leader. This last role, the delegate chosen by the small circle, is called "double linking". The delegate is a voting member of the parent circle.

Timebanking

Homeownership can involve a lot of costs in time and money like mowing, raking, home maintenance, and improvements. Then there are the less obvious costs like commuting to jobs, trips to the grocery store, and isolation. Any of these could be deal breakers for low- and middle-income households or other vulnerable populations like the elderly or those with disabilities. For those living as a community timebanking is an opportunity to share that load while giving dignity to all work at all abilities. This model could be used to share the responsibilities for the property without having to hire an outside contractor for things like groundskeeping, maintenance, housework, and childcare.

The five principles of timebanking are: Assets, Redefining Work, Reciprocity, Social Networks, Respect.

Timebanking is sort of an alternative currency of "time". Everybody in the community has something to contribute. Giving one hour of time is worth receiving one hour of time. In this way it is sort of like bartering, but with a significant difference. In a same way that deposited money of a member in a bank is not just sitting in the vault in an envelope with their name on it, timebanking allows members to make deposits and withdrawals from the skill pool of all its members. It intentionally gives value to all work, even work that has not always traditionally valued as "work" such as listening, civic engagement, caring, and mentoring but also picking up groceries, doing laundry, or helping with housework. These are essential to our humanity. According to Cahn, timebanking, changes the narrative of the transactional economy from "How can I help you?" to "How can we help each other build the world we all want to live in?" (Cahn)

Sociocracy and timebanking compose the empowerment layer of tools I propose communities to make their own decisions and to empower them to accomplish the objectives they decide. Much of the details that follow of budgeting, planning, funding, building, or doing as a community is meant to be up to the community that will live with those decisions. However, some decisions must be made even on the topic of how to make decisions. I plan to use both sociocracy and timebanking as tools in the formation of communities.

"We have no money; all we have is each other."

— Fr. Fayhe (Quoted in Cahn)

The aim of these tools is empowerment. Once contracts are signed these households will be in a long-term committed relationship with each other and eventually living in close proximity. I would much rather they choose their own neighbors. Therefore, before a site is selected or any work begins, I would like to allow potential communities to form themselves. The timebank is a great tool for this as it gives members a chance to work together and form relationships.

Each potential cohort should exchange a certain aggregate amount of timebank hours before being eligible for site selection, sort of in the same way that Habitat for Humanity used to require "sweat equity" and still does require several hours of education. Sociocracy also could be a part of that education. Heartwood Commons, a senior cohousing community in Tulsa, was formed as an LLC that would later transition into a Homeowner's Association (HOA) after all the units have been purchased. The LLC status allowed them to expect potential members to visit Heartwood Commons and participate in various events before becoming members (Sharp). This formation and education period could be facilitated by such an arrangement.

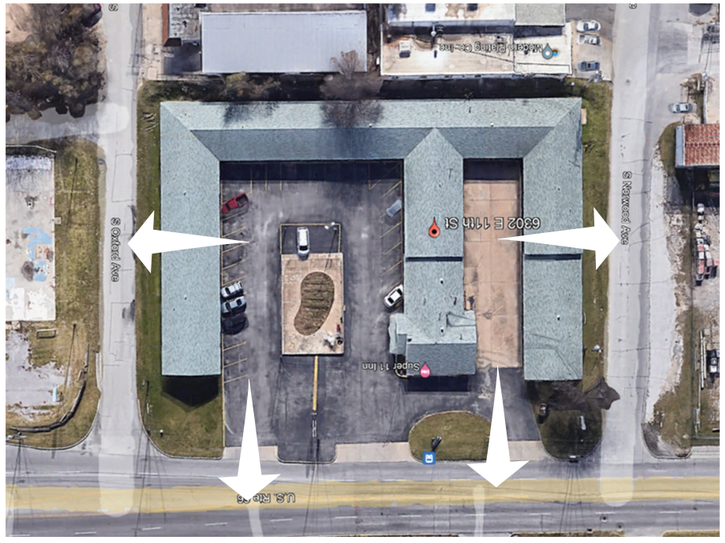
A cohort might ultimately decide on another form of governance, but they must have some plan for making decisions before moving on to a project.

While a community may choose its own governance, the timebank has a broader reach and impact. Indeed, there is every reason that timebank membership should be open to anyone in the region. Every member of the timebank benefits from having more members and a larger talent pool.

Community Layer

Cohousing

As discussed in chapter two, cohousing is a conscious choice for shared living. It is comprised of two parts: the private and the communal.

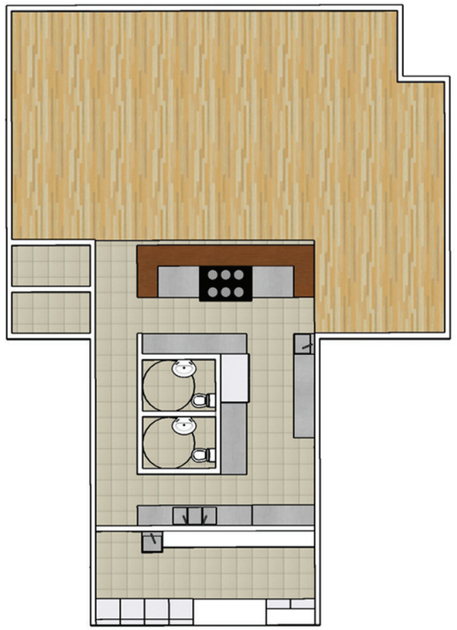


Courtyard parking lot of the Super 11 Inn (Google Earth)

Relocating parking to the periphery creates a courtyard for people

Each household has their own private dwelling space with kitchens, bathrooms, and bedrooms, which supports the homeownership goal of this project. And yet each household is intentionally engaged in the life of the community which is the other major goal of this project. This engagement fosters friendships and supportive social networks. The community space fosters spontaneous interactions. The center of this interaction is usually the community house: a shared space meant to gather for community meals, meetings, work, and decision making. Another element common to cohousing ideology is taking the car out of the community. Parking lots are a necessity of life for Tulsans, but in cohousing they are intentionally moved to the periphery, so that the heart of the community is walkable and sociable.

In cohousing particular attention is paid to the shared elements of the community. The community space is intended to draw people out of being holed away in their private units. Flexible indoor and outdoor spaces are meant to accommodate comfortable gatherings in most seasons.



Community House (1592 sqft)

Community House

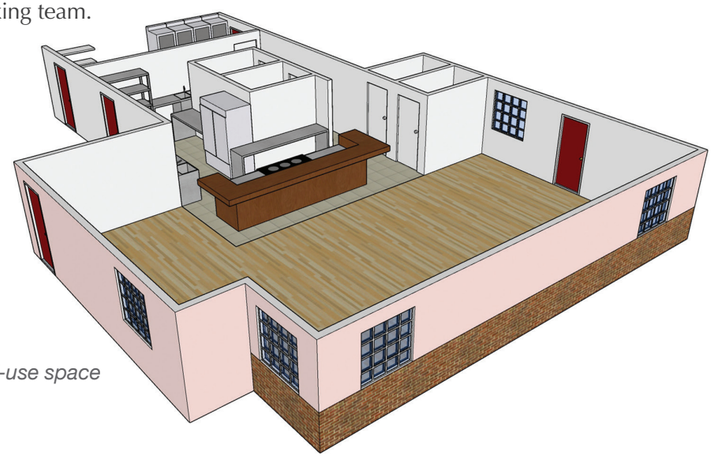
The multi-use community house is the center of community life in cohousing. The community shares meals here, but the natural result of sharing meals as a community is making plans to have other smaller gatherings throughout the week (Kim). Bar seating allows community chefs to entertain and prepare meals for smaller more intimate gatherings or for guests.

Community House: 1,592 sqft
- Community meals, movies, yoga, recreation, gatherings

Courtyard: 13,985 sqft
- Outdoor cooking, dining, exercise, recreation, gatherings

Patio Space: 3,838 sqft
- Quieter outdoor seating

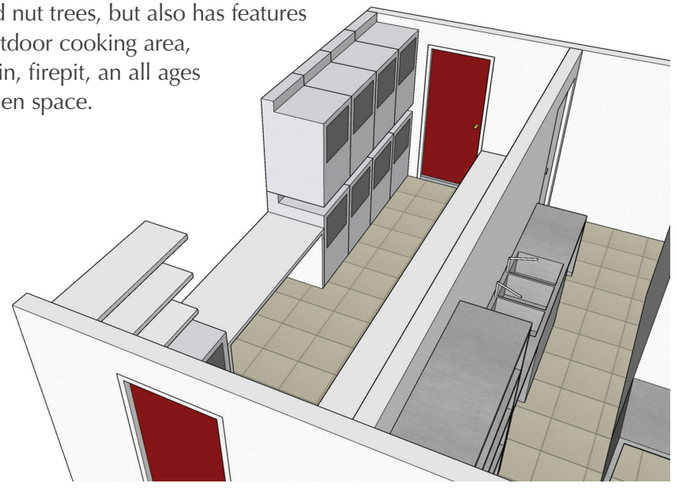
Multi-use space
Dining room space is based on rule-of-thumb estimate of 15 sqft. per person at 76 persons for a total of 1140 sqft. Commercial kitchen to dining room ratios range from 1/3, to 1/4 putting the necessary kitchen space at 285-380 sqft (Decker). The outdoor kitchen is placed just across from the indoor kitchen with a dedicated entrance for the convenience of the cooking team.



Multi-use space

Laundry could more properly be considered a part of the logistical layer; however, the 241 sqft laundry room is attached to the community house to encourage more social interaction. It has east and west entrances for the convenient use of all residents and can create a wind tunnel effect on hot days by opening both doors.

Once cleared of parking stalls and asphalt, the main courtyard will provide a pleasant place for residents to casually gather. It has functional qualities like planters and nut trees, but also has features designed for enjoyment such as, outdoor cooking area, pergolas, pool, Zen Garden, fountain, firepit, an all ages all stages playground, and open green space.



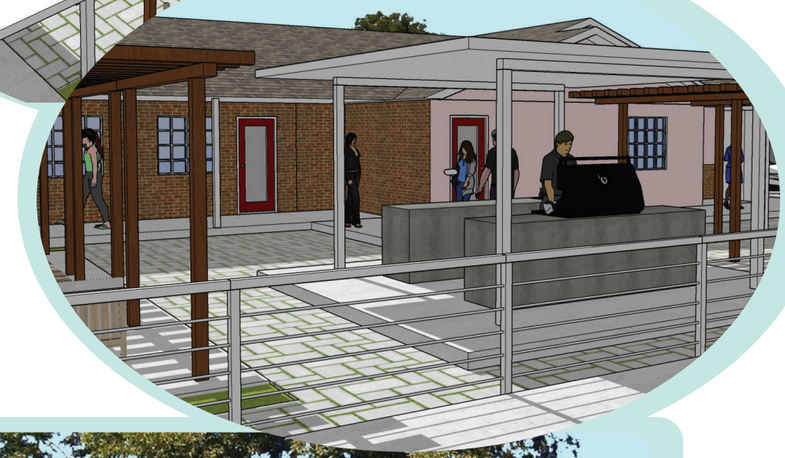
Laundry

Clockwise from top left: green space, court seating, outdoor kitchen, playground

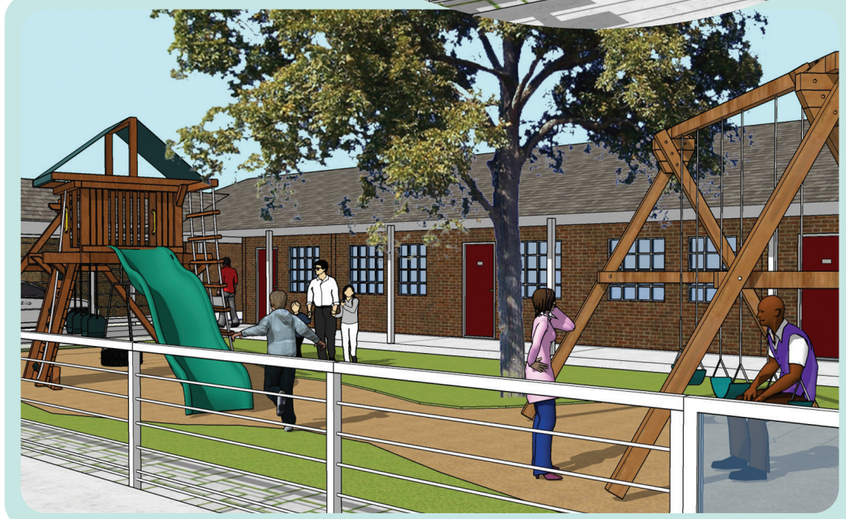
green space

court seating

outdoor kitchen



playground

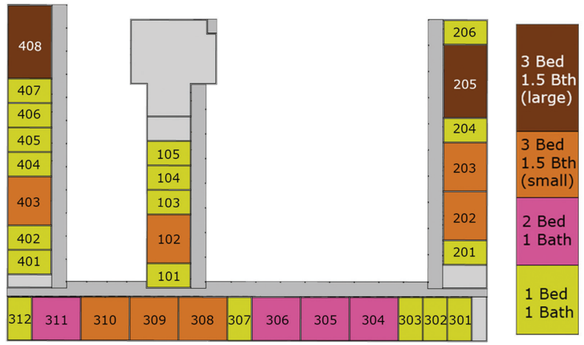


Private Layer

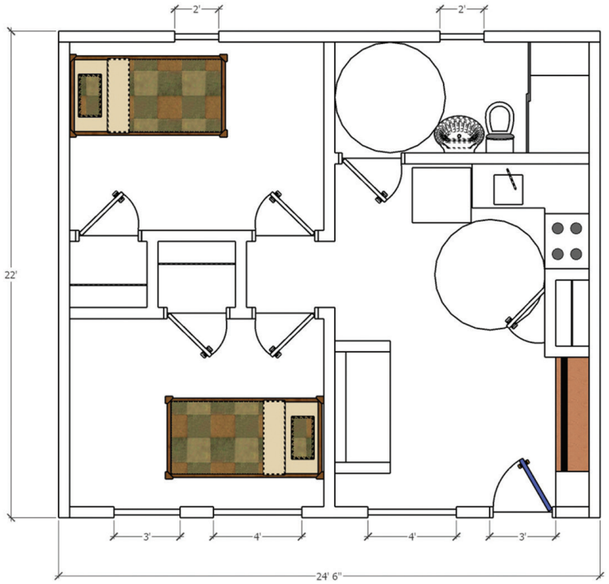
The conversion of hotel rooms into condominiums is based around a modular design approach. There will likely be some variation in size of rooms even within a single hotel, but this is more of a proof of concept based on a 12-foot by 22-foot hotel unit.

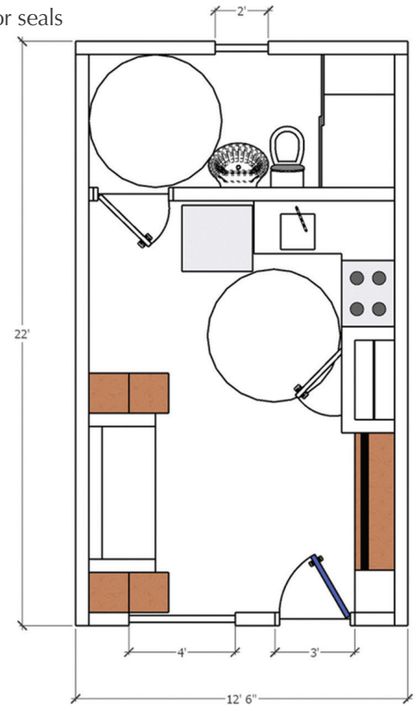
Because these units are small, it is recommended that acoustic dampening strategies be employed at renovation. Installing door seals and insulating the interior walls will not add significant cost to the renovation but will result in a higher quality of life for years.

The four configurations were designed in 264 sqft increments. Each of these configurations has a living arrangement in mind.



Unit Layout



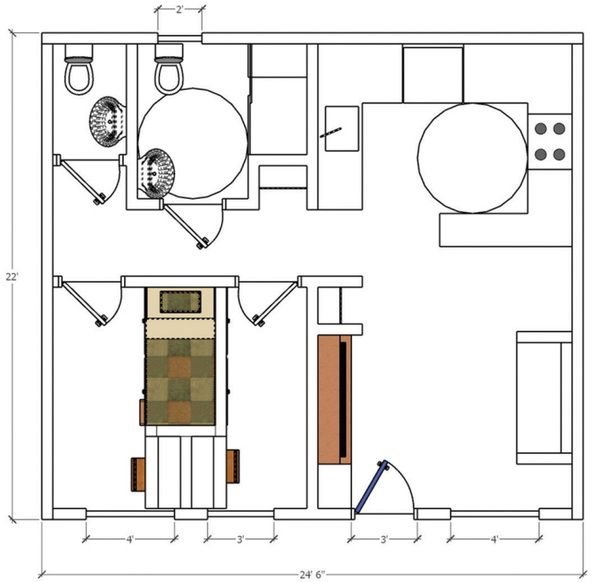


The **single room "efficiency" unit** would be a good fit for a young adult or senior individual or couple.

Configuration: 1 bed, 1 bath
Size: 264 sqft
Units in Plan: 18

The **two-bedroom "supply" unit** would be a good fit for a parent or parents with a single child or two adults in a co-living arrangement.

Configuration: 2 bed, 1 bath
Size: 528 sqft
Units in Plan: 4

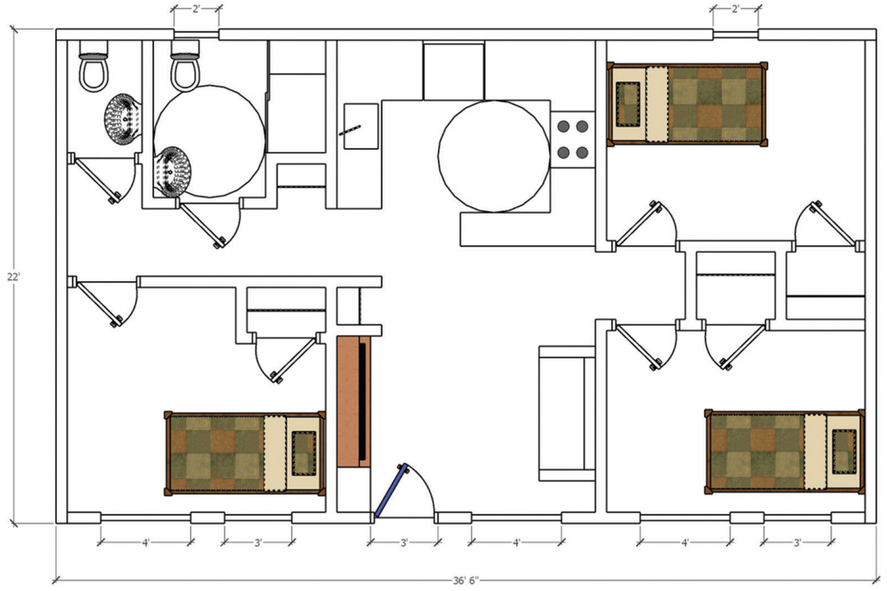


The **"small" three-bedroom unit** would be a good fit for a parent or parents with up to two children.

Configuration: 3 bed, 1.5 bath
Size: 528 sqft
Units in Plan: 7

The **"large" three-bedroom unit** would be a good fit for a larger family or up to three friends in a co-living arrangement.

Configuration: 3 bed, 1.5 bath
Size: 792 sqft
Units in Plan: 2

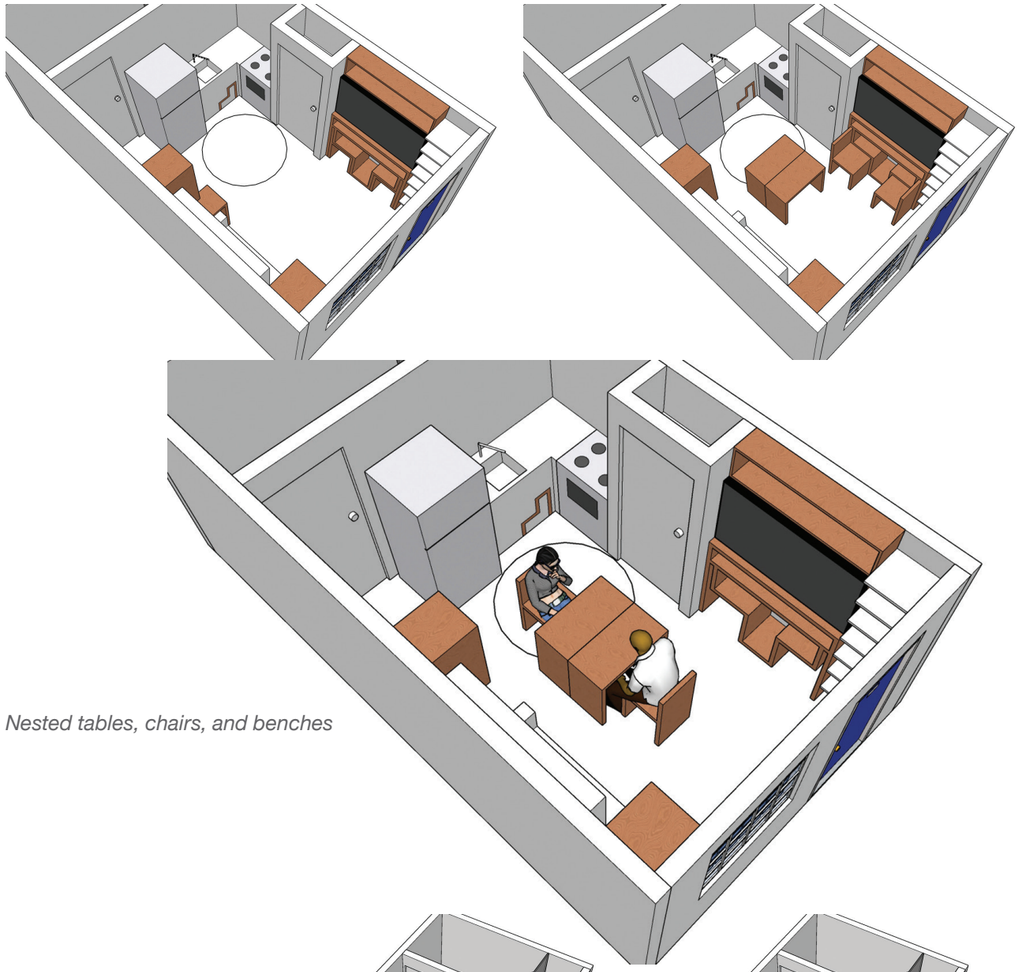


Kitchens

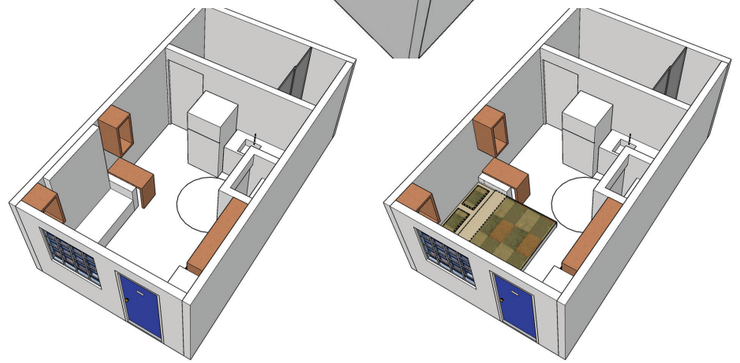
Kitchens were designed with the “Work Triangle” in mind with the refrigerator, food preparation surface, and cooking element all within arm’s reach. Space for a full-size refrigerator and oven is provided, and the arrangement facilitates having someone assist from outside the cooking triangle. In keeping with space saving techniques cabinets extend all the way to the ceiling, and to make those cabinet spaces accessible to the average 5’4” American female, convenient nested step stools are designed into the cabinet space.

Space Saving Techniques

Spaces that would otherwise be empty or taken up by bulky furniture are instead utilized with built-ins for additional storage capacity.

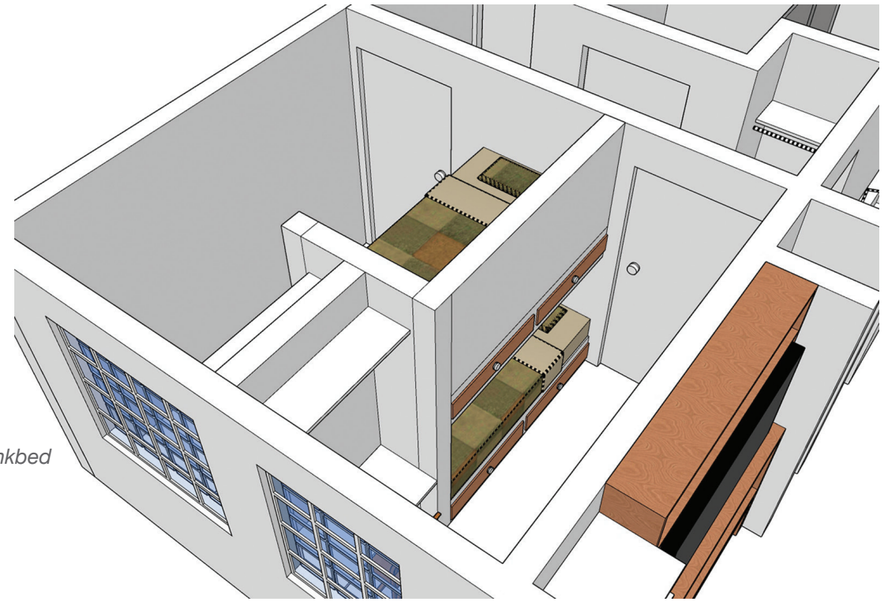


Nested tables, chairs, and benches



Retractable Murphy bed

For households with children, a split-room bunkbed was designed exclusively for this project allowing the space that would normally be empty above a bed in one room to be used by another room.



Split-room bunkbed

Site Plan

Finishing the individual unit configurations was a necessary step to estimating that the population capacity of the entire site could be up to 76 residents. The population estimate could then be used to determine the capacity of the community house, and the unit count and capacity could be used to calculate the number of regular and accessible parking spaces and other parts of the logistics plan.

Logistical Layer

Parking for a condominium in Commercial High Density requires 1.10 stalls per unit with 0-1 bedrooms and 1.75 stalls per unit with 2 or more bedrooms. These ratios were added to the pro forma spreadsheet identifying the total number of parking stalls to be 43 (Tulsa Zoning Code Table 55-1) of which at least two needed to be accessible passenger van stalls (2015 IBC Table 1106.1).

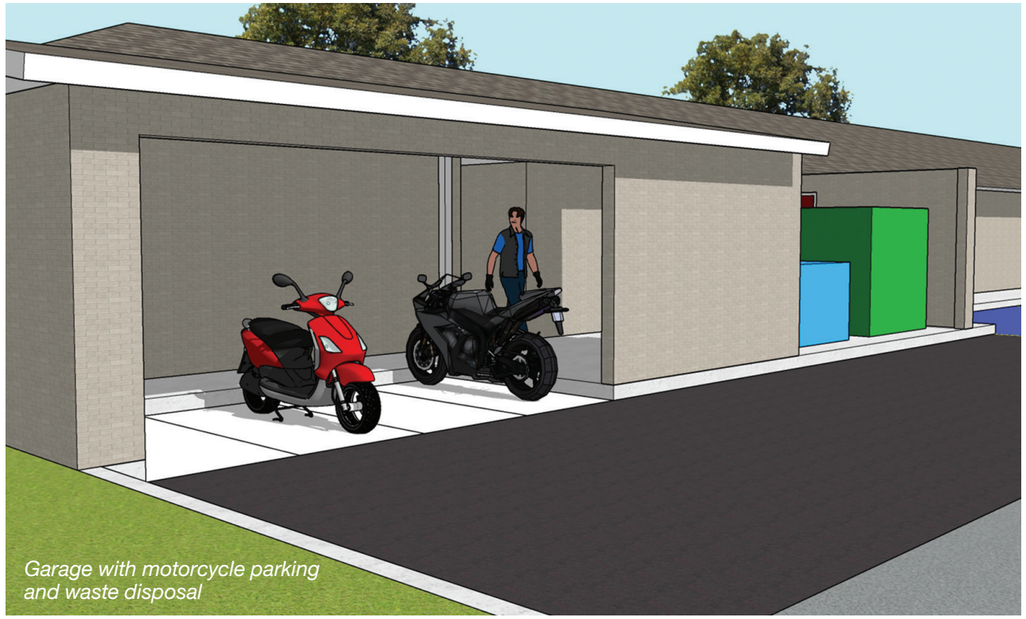
An exemption for lots containing more than 10 parking stalls could reduce by one normal parking stall for every two motorcycle/scooter parking stalls. This strategy was employed by using 12 motorcycle/scooter parking stalls (four in the garage and eight out front) in exchange for six normal stalls (Tulsa Zoning Code 55.050-E).

Estimating the capacity needed for **waste removal** is a formula.

.12 cubic yards of waste per resident per week x 76 residents = 9.12 cubic yards (Road Runner)

This is slightly more than the largest commercial dumpsters of eight cubic yards. Supplementing with a smaller two or four cubic yard recycling dumpster should meet this need.

There are two strategies for handling waste. The first is to have dumpsters spread throughout the community for ease of disposal. The second is to have a plan for collecting waste and taking it to a single disposal location. I created a single disposal location just outside of the main courtyard. The strategy is to have a small circle that manages the logistics of waste removal. A person or team in the community can collect the waste and take it to the disposal location for timebank credits. Hoping that kids could participate and contribute to the community, I placed a wall around the enclosure so that they would not actually have to leave the site to haul out the waste. This enclosure was extended a little to provide a locked garage for motorcycle or scooter storage.



Garage with motorcycle parking and waste disposal

Security Layer

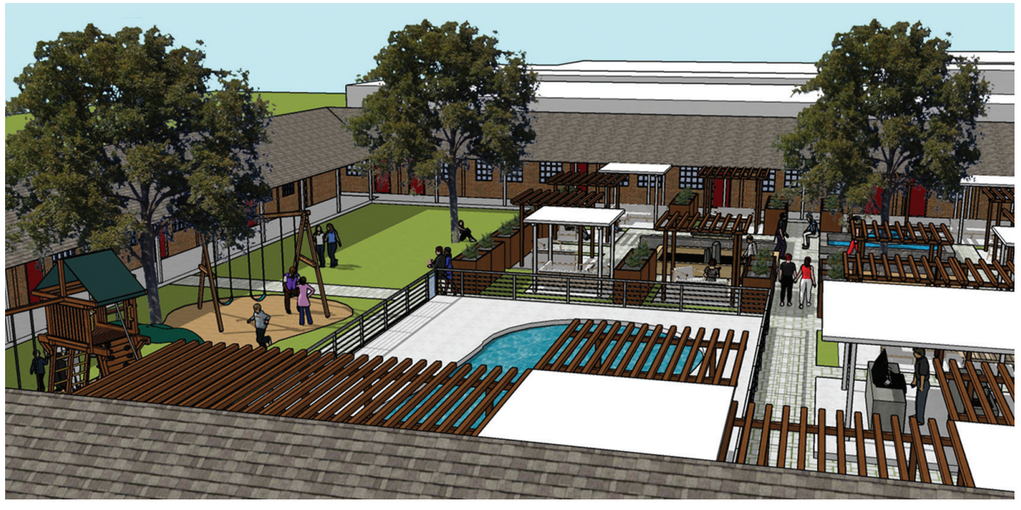
Food Security

The greenhouse contains a 20-foot by 30-foot work and storage area and two 30-foot by 32-foot growing area. The positioning of the greenhouse places the storage and work area closest to the southern wing of the courtyard, so that the shadow cast by the building affecting the growing area will be minimized. It is aligned north and south because this location is below 40 degrees latitude which helps mitigate the sun radiation rather than capture it. (United States Botanical Gardens)

Greenhouse: 2520 sqft

The courtyard has areas for three pecan trees which should be planted at 40 to 60 feet apart (Carroll). As a food supply, fruit and nut trees generally represent the greatest yield for the effort required to maintain them and nut trees do not attract as many insect pests. Pecan trees are sort of notorious for dropping limbs; however, they are a medium-hard wood that can be used for grilling or smoking in the outdoor kitchen.

Pecan trees for food and shade

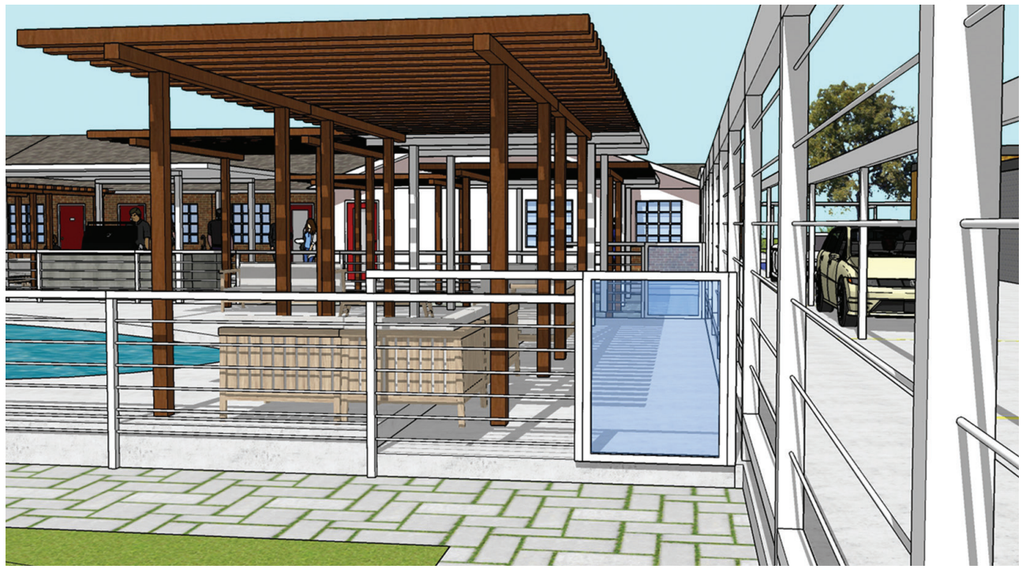


Planters for herbs and smaller plants

Planters are used to define cooking and sitting spaces in the courtyard.

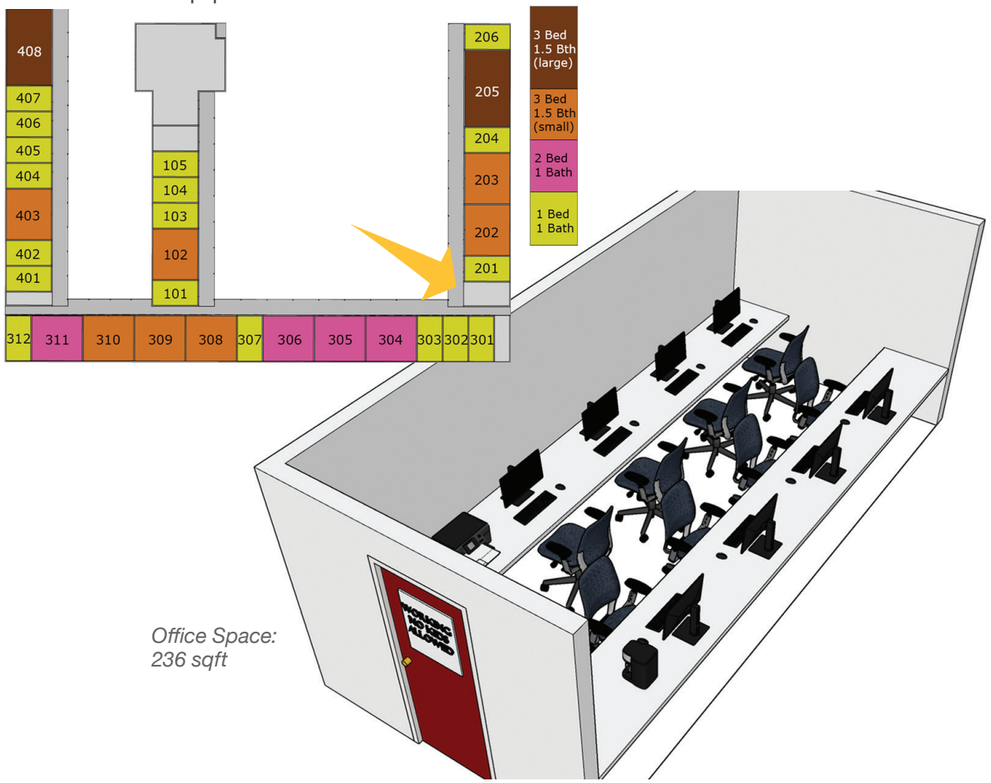
Fencing around the pool area and closing in the courtyard can be used like a trellis for beans or other climbing plants.

Trellises for beans or other climbing plants



Job Security

Working from home might be challenging for someone with a family or roommates. A dedicated room is set aside for desks, computers, and other office equipment.

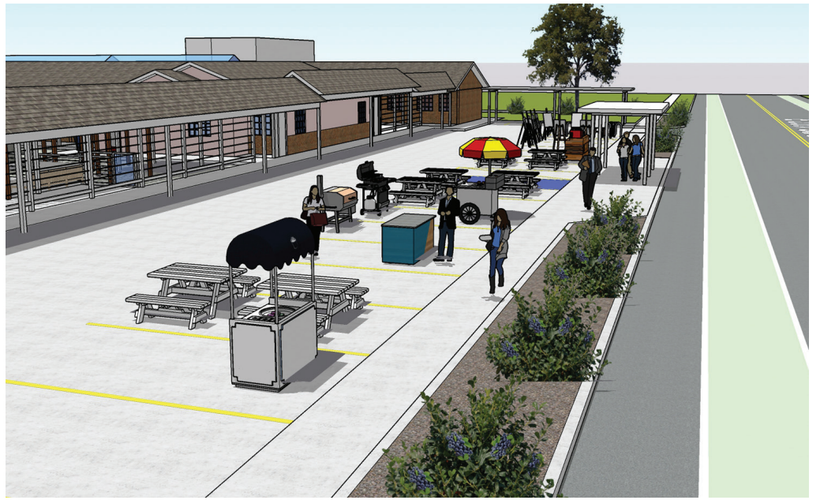


Office Space: 236 sqft

Transportation Security

Transportation is expensive, and Tulsa is a car dependent. A monthly rent fee for parking stalls could encourage use of the bike lanes and Bus Rapid Transit (BRT) along 11th street. A car-share program also could be implemented to mitigate the risk and costs associated with individual car ownership. Having the community own a small fleet of cars for use by the residents could further reduce that individual risk. A fleet of vans owned by the community could basically serve as a private shuttle service ff several members of the community travel to the same areas of the city regularly, such as employment centers, shopping districts, entertainment districts, schools, and universities. The care and maintenance of the fleet could be another opportunity for timebanking.

The bonus effect of reducing dependence on cars is the freeing up of valuable space on the property which could be used first, as an open-air market, and later as a row of shop fronts.



Open air market in parking lot

Small shops could create a live-work situation further increasing financial security utilizing the flexibility of Commercial High-Density zoning (Tulsa Zoning code Table 15-3).

Storefronts and streetscape

Sustainability Layer

This project is concerned with affordable housing, but affordability extends beyond the purchase or the 30-year mortgage. Having a budget and a strategy can provide for more expensive sustainability improvements over time.

Renovation Phase

Using an existing structure is a great start for sustainability because it requires less new building material and infrastructure. Super insulating the attic space is the easiest and cheapest improvement for energy savings, and the use of space efficient small units further reduces energy consumption. Installing energy efficient appliances is not as cheap but significantly reduces energy costs over their lifetime. A boiler and chiller system or geothermal HVAC is much more efficient than individual furnace system commonly used in residential buildings, and they last much longer. Unfortunately, the cost can be prohibitive (Sanalife). Funding might have to be supplemented with grants or other sources.

Future Improvements

Utilizing the car-share or shuttle program increases both affordability and sustainability by reducing wasted energy, materials, and depreciation.

Other strategies can be planned for over time as the community wealth grows. A solar array is expensive, but the electrical connections could be installed during the initial renovation, which would reduce their installation costs later. When these energy production and conservation methods have been combined, even an older building could reach carbon neutrality.

Chapter 6: Conclusions and Results

Summary of findings

The central research of this project is the adaptive reuse of underutilized buildings into a community-based approach to affordable homeownership. The method employs the use small units to maintain affordability, the sharing of risks to increase financial stability, collective investment to encourage future sustainability, and the strengthening of social support networks through community living and shared spaces.

Estimated unit cost with only conversion to housing

Configuration	1+1 "Efficiency"	2+1 "Supply"	3+1.5 "Small"	3+1.5 "Large"
Full Unit Price	$ 32,920	$ 65,840	$ 65,840	$ 98,760
% AMI 30-Yr Loan	59.9%	98.7%	98.7%	137.6%
Monthly Payment	$ 713	$ 1,176	$ 1,176	$ 1,639

Estimated unit cost with common house, courtyard, office space

Configuration	1+1 "Efficiency"	2+1 "Supply"	3+1.5 "Small"	3+1.5 "Large"
Full Unit Price	$ 37,533	$ 75,066	$ 75,066	$ 112,600
% AMI 30-Yr Loan	62.0%	103.1%	103.1%	144.2%
Monthly Payment	$ 739	$ 1,228	$ 1,228	$ 1,717

Estimated unit cost with community spaces and boiler/chiller system

Configuration	1+1 "Efficiency"	2+1 "Supply"	3+1.5 "Small"	3+1.5 "Large"
Full Unit Price	$ 46,231	$ 92,462	$ 92,462	$ 138,694
% AMI 30-Yr Loan	66.2%	111.3%	111.3%	156.5%
Monthly Payment	$ 788	$ 1,326	$ 1,326	$ 1,865

In the course of this research project I learned that affordable housing and workforce housing are two different things and both are difficult to finance. Hotels can be repurposed into housing units, but the per square foot cost is comparable to existing housing options. The real contribution of this approach is that smaller unit sizes can make homeownership more attainable for a broader range of incomes, sharing large portions of the property can help keep maintenance costs down while providing opportunities for serendipitous social engagement, and designing for all ages and abilities means members do not age out of their home and community.

Objections and failures

Small Units

The tradeoff for keeping costs low is the size of the units. Keeping the costs low actually means that the price per square foot is higher than many larger houses on the market. However, the hurdle of getting into homeownership is much lower. I do believe that the quality of life and peace of mind that comes from ownership and the large, shared spaces and amenities are worth that tradeoff. However, this project focuses on the creation of affordable units. The other proposed shared spaces and amenities could take many years to fund.

Another limit of this project is market demand. The research was largely dedicated to creating a new approach to affordable homeownership, and it remains to be seen if there is really market demand for this approach. I personally doubt that this model is for everyone, but I think that there will be some Tulsans who will just get it.

High Association Fees

Much of the annual cost per unit is in the association fees. This does increase the cost burden for housing using this model; however, those funds are for the benefit of the community not the profit of a managing company. Its intended affect is greater stability and financial predictability for the individual households and, not just maintaining the community, but its continuous development and improvement.

Areas for further research

Homeownership Versus Rent

At the beginning of this project I was insistent on homeownership. This is due in part to homeownership as a means of wealth creation but also because of the historical racial bias that prevented minorities from that route to wealth. Indeed, I was surprised to find that federal policy practically reinforces that bias by more heavily subsidizes homeowners than rental assistance (Buckley 9). While the COVID-19 pandemic revealed just how severe the affordable housing crisis has become, it also has revealed how much more predictable a 30-year mortgage is to market rate rents. I maintain the insistence on homeownership, but now that is also because of the financial and community stability it undergirds.

If nothing else at least moving households out of the rental market reduces the demand-side upward pressure on rents thereby improving affordability for those households not yet financially stable enough for homeownership. As a bonus, it also helps keep the wealth of Tulsans in Tulsa instead of having it extracted by far off financial institutions.

Funding Sources

It was hoped that there would be sources available for affordable homeownership. It turns out that the application of "affordable housing" almost exclusively means rent. What I discovered while researching the policies of the Tulsa Affordable Housing Strategy and those of HUD more broadly is that while an affordable homeownership project meets the stated principles and objectives, the funding requirements separate the two: affordable rent is one thing and supporting homeownership is another. According to Oklahoma's HUD branch office, households below 80% are generally not financial prepared for homeownership, and households below 60% AMI are considered at-risk. For these most precarious households the focus is on housing stability (Cook). That sounds reasonable, but houses below 60% AMI would seem likely benefit the most from the stability and wealth creation of homeownership.

The Affordable Housing Trust Fund (AHTF) allows for up to $40,000 per unit (or one million dollars, whichever is exhausted first) in interest free construction loans to be paid back over 10 years for the development of affordable rental units, or the AHTF could provide a grant up to one million dollars for an agency funding homeownership education or homebuyer assistance programs for homebuyers (Maun). While this second is more relevant to this project, it is still vague.

As far as I have been able to determine homebuyer assistance amounts to down payment and/or closing cost assistance up to 5% of the purchase price (Housing Partners Tulsa). However, because affordable homeownership models are not a part of the consideration, funding assistance decreases with the affordability of the home.

There is a great opportunity for further research by exploring the conceptual separation between the two types of housing mostly available to Tulsans: single-family detached homes for purchase; and cheap multi-family, for rent; and the types of funding policies that force the separation of the two.

Implications for Tulsa Affordable Housing

Improving the living situation of low- and middle-income households and encouraging homeownership and investment in community do not have to be at opposition. This project could serve as a model of how affordable housing could contribute value to the community through increased density and thereby attracting commercial investment instead of allowing vacant and underutilized buildings to blight a neighborhood.

Two figures portray how the conversion of hotels into housing could affect affordability in Tulsa. The first figure is that approximately

		ASSESSOR	SQFT	PSF	ZONING
Oak Tree Inn 11620 E Skelly Dr, Tulsa, OK 74128	needs to be bulldozed	$1,454,700	89,915	$16	IL
Knight's Inn 5000 E Skelly Dr, Tulsa, OK 74135	OYO south of I-44 on Yale	$1,439,600	140,298	$10	CS
Wyndham Tulsa 10918 E 41 St, Tulsa, OK 74146	closed	$1,765,200	232,530	$8	CO
Crowne Plaza Tulsa-Southern Hills 7902 S Lewis Ave, Tulsa, OK 74136	redevelopment stalled	$1,502,800	167,582	$9	CO
Rodeway Inn & Suites 1737 S 101 E Ave, Tulsa, OK 74128	promising, but building may be worthless	$172,700	27,452	$6	CS
America's Best Value Inn 1016 N Garnett Rd, Tulsa, OK 74116	possibly in operation	$1,537,800	32,724	$47	CS
America's Value Inn 10117 E 11 St, Tulsa, OK 74128	closed	$487,777	62,352	$8	CS
Economy Inn 1036 Garnett Rd, Tulsa, OK 74129	recently bulldozed	$233,800	13,452	$17	CS

Table of potentially vacant hotels with assessed values, price per square foot, and zoning

4,200 households in Tulsa are income eligible for subsidized housing of which only about 1,300 units exist (Tulsa Housing 26). The second figure is that during the course of this research more than 750,000 square feet of hotel space was discovered that is currently sitting vacant within the city of Tulsa.

Vacant or underutilized hotels could do much to alleviate the shortage of housing in Tulsa even with units of more generous size than have been proposed in this project.

The first step should be a presentation to see if there is public demand for this type of housing model. If that demand can be established, the next step would be to create educational material for policy makers and influential citizens of the Tulsa area. This project might present an opportunity to help improve housing affordability, housing security, and the sense of community for more Tulsans.

Community Health

Malcolm Gladwell tells the startling story of Roseto Pennsylvania and how the citizens have tremendous health benefits from living in a community with a strong social support network (Gladwell 3). The community effect on individual health is now identified by the Centers for Disease Control and Prevention as one of the Social Determinants of Health. It is beyond the scope of this project, but I would like to research if intentionally assembled communities of diverse cultural experiences, incomes, ages, and household sizes could gain the same mental and physical health benefits as found in the community of Roseto.

Works Cited

Abramovitz, Mimi, and Richard J. Smith. "The Persistence of Residential Segregation by Race, 1940 to 2010: The Role of Federal Housing Policy." *Families in Society: Journal of Contemporary Social Services* 102, no. 1 (January 2021): 5–32. doi:10.1177/1044389420923469.

2010 ADA Standards for Accessible Design, 15 Sept. 2010, https://www.ada.gov/regs2010/2010ADAStandards/2010ADAstandards.htm#sec233

Admin. "Dumpster and Recycling Considerations for a New Apartment Complex." *Road Runner Waste Service Inc*, 18 Apr. 2019, https://www.roadrunnerwastenm.com/dumpster-and-recycling-considerations-for-a-new-apartment-complex.

Bokat-Lindell, Spencer. "Opinion | America's Housing Crisis Is a Choice." *The New York Times*, August 10, 2021, sec. Opinion. https://www.nytimes.com/2021/08/10/opinion/housing-crisis-eviction.html.

Brady, Shane, and Jeremy Banes. 16 Sept. 2021.

Buckley, Robert M., and Alex F. Schwartz. *Housing Policy in the US - The Evolving Sub-National Role*. 6 May 2011, https://www.files.ethz.ch/isn/129656/Buckley_and_Schwartz_2011-06.pdf.

Cahn, Edgar. "Believe in People." TedxAshokaU, 19 Feb. 2010, https://www.youtube.com/watch?v=COn7Fc5ZurQ. Accessed 29 Mar. 2022.

Carroll, Becky. "Managing Pecans in the Home Landscape - Oklahoma State University, 1 Mar. 2017, https://extension.okstate.edu/fact-sheets/managing-pecans-in-the-home-landscape.html.

Cassie, Kim, and Jeremy Banes. 25 Aug. 2021.

City of Tulsa. "Affordable Housing Strategy," 2019. https://www.cityoftulsa.org/economic-development/why-tulsa/housing/.

City of Tulsa. "Comprehensive Housing Market Analysis." Novogradic & Company, 16 July 2010, https://www.cityoftulsa.org/press-room/downtown-and-surrounding-neighborhoods-housing-study-results-released-additional-housing-survey-launched/.

City of Tulsa. “Five Year Consolidated Plan 2020-2024.” 30 June 2018. https://www.cityoftulsa.org/government/departments/finance/grants/plans-and-reports/.

City of Tulsa. “Tulsa Housing Study and Strategy.” 15 July 2020. https://www.cityoftulsa.org/media/13869/tulsa-housing-study-and-strategy_final-7-15-20.pdf.

Cook, Earl and Jeremy Banes. 28 Oct. 2021.

City of Tulsa. “Tulsa Zoning Code - Tulsaplanning.org.” 24 Dec. 2021. https://tulsaplanning.org/plans/TulsaZoningCode.pdf.

Decker, Fred. “Restaurant Kitchen-to-Dining Area Ratio.” *Your Business*, 29 Sept. 2016, https://yourbusiness.azcentral.com/restaurant-kitchentodining-area-ratio-14065.html.

“Downtown & Surrounding Neighborhoods Housing Study & Strategy.” *City of Tulsa*, May 2020, https://www.cityoftulsa.org/.

Dunn, Kayla. “Tulsa’s Housing Market: A Deep Dive.” Tulsa World. Accessed August 18, 2021. https://tulsaworld.com/business/local/tulsas-housing-market-a-deep-dive/article_654ec546-f08a-11eb-ae2a-07f7de312a2b.html.

Foley, Miriam. “How-Cohousing-Is-Making-Life-Easier for Families.” .Com. Bloomberg. Bloomberg, June 23, 2021. https://www.bloomberg.com/news/features/2021-06-23/how-cohousing-is-making-life-easier-for-families.

Gladu, Cheryl. “Get to Know the Neighbours: Cohousing Experiments in Democratic Living.” *CCPA Monitor* 25, no. 5 (January 2019): 44–46. http://libraries.ou.edu/access.aspx?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=133865372&site=ehost-live.

Gladwell, Malcolm. “The Roseto Mystery.” Outliers: The Story of Success, Back Bay Books, Little, Brown and Company, New York, 2019, pp. 3–11.

“‘H+T Fact Sheet: True Affordability and Location Efficiency.” Municipality: Tulsa, OK. H+T *Affordability Index*, https://htaindex.cnt.org/fact-sheets/.

“Housing Needs Assessment Tulsa County.” *Oklahoma Housing Needs Assessment*, Integra Realty Resources, 1 Oct. 2015, http://oklahomahousingneeds.org/counties/tulsa-county/.

Hulse, Travis, et al. INCOG. 2 Sept. 2021.

International Code Council. “2015 International Building Code (IBC): ICC Digital Codes.” *2015 INTERNATIONAL BUILDING CODE (IBC) | ICC DIGITAL CODES*, 1 Oct. 2015, https://codes.iccsafe.org/content/IBC2015.

Kim, Grace, director. How Cohousing Can Make Us Happier (and Live Longer) | TED Talk, Apr. 2017, https://www.ted.com/talks/grace_kim_how_cohousing_can_make_us_happier_and_live_longer. Accessed 20 Sept. 2021.

Mackay, Ian M. (2020): The Swiss Cheese Respiratory Virus Defence. figshare. Figure. https://doi.org/10.6084/m9.figshare.13082618.v24

Maun, Kristin, and Jeremy Banes. 20 Aug. 2021.

Miller, Valerie. “How Timebanking Can Help Rebuild Community Spirit.” TedxDouglas, 17 Dec. 2014, https://www.youtube.com/watch?v=VRHvoYas82g&t=362s. Accessed 18 Jan. 2022.

O’Donnell, Katy. “The Main Driver of Inflation Isn’t What You Think It Is.” POLITICO, 18 Mar. 2022, https://www.politico.com/news/2022/03/18/housing-costs-inflation-00015808.

Pearle, Wendy. “Sociocracy from the Start in Cohousing.” Cohousing, 18 Apr. 2021, https://www.cohousing.org. Accessed 19 Apr. 2022.

Pioneer Valley Cohousing. “Work and Governance.” Pioneer Valley Cohousing, 22 Feb. 2022, https://web.cohousing.com/governance/.

Rau, Ted. “The Difference between Whole-Group Consensus and Dynamic Governance/Sociocracy.” Sociocracy For All, 1 Dec. 2021, https://www.sociocracyforall.org/the-difference-between-whole-group-consensus-and-dynamic-governance-sociocracy/.

Rau, Ted. “Group Decision Making and How Sociocracy Helps.” Sociocracy For All, 1 Mar. 2022, https://www.sociocracyforall.org/group-decision-making/.

Rau, Ted. “Heart of Community.” *Cohousing.org*, 28 Apr. 2020, https://www.cohousing.org. Accessed 14 Apr. 2022

Rau, Ted. “Selection Process.” Sociocracy For All, 1 Mar. 2022, https://www.sociocracyforall.org/selection-process/.

Reyes, Crystal and Jeremy Banes. 4 Sept. 2021.

Sanalife. “How to Estimate Commercial HVAC Upgrade Costs: Sanalife.” RSS, https://www.sanalifewellness.com/blog/how-to-estimate-a-commercial-hvac-upgrade-cost.

Semuels, Alana. “When Wall Street Is Your Landlord.” The Atlantic. Atlantic Media Company, April 8, 2019. https://www.theatlantic.com/technology/archive/2019/02/single-family-landlords-wall-street/582394/.

“What Is Cohousing?” *Cohousing*, 21 Aug. 2019, https://www.cohousing.org/what-cohousing/cohousing/.

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Whatever is of highest quality in this report reflects well on you all.
My only claim is responsibility for all its shortcomings.

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Two books influenced this project in ways that are hard to quantify but should be recognized nonetheless.

The Outline of Sanity (1926) by G.K. Chesterton and *The Permaculture City* (2015) by Toby Hemenway shaped how I thought about the relationship of home, culture, and community in the context of the city. I believe these two works possess key ideas for reimagining the form and condition of justice in our cities.

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