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The Portland ADU Market: Conditions, Costs, Drivers, Incentives

Northwest Economic Research Center

Institute for Sustainable Solutions

Portland State
UNIVERSITY

The Portland ADU Market

Conditions, Costs, Drivers, Incentives

NeRC

Northwest Economic Research Center
College of Urban and Public Affairs

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The Institute for Sustainable Solutions works to match the passion and expertise of Portland State University faculty and students with the experience and needs of community groups, government agencies, and businesses to develop practical solutions for more equitable, livable, sustainable cities and regions.

NERC is based at Portland State University in the College of Urban and Public Affairs. The Center focuses on economic research that supports public-policy decision-making, and relates to issues important to Oregon and the Portland Metropolitan Area. NERC serves the public, nonprofit, and private sector community with high quality, unbiased, and credible economic analysis. Dr. Tom Potiowsky is the Director of NERC and former Chair of the Department of Economics at Portland State University. Dr. Jenny H. Liu is NERC's Assistant Director and Associate Professor in the Toulan School of Urban Studies and Planning. This report was researched and written by Peter Hulseman, Emma Willingham, and Adam Rovang.

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Executive Summary

This report was researched and written by the Northwest Economic Research Center of Portland State University (PSU) in collaboration with the Institute for Sustainable Solutions (also at PSU) in order to explore the potential for accessory dwelling units (ADUs) to increase housing affordability in the Portland metropolitan region. Additionally, this report seeks to broadly assess the efficacy of the City's SDC fee waiver for increasing affordability by increasing the rental housing supply.

In October and November of 2017, ISS conducted an online survey of ADU owners and occupants, the results of which constitute the most exhaustive collection of data regarding ADUs built within Portland city limits. This survey is the primary source of data for this report. (More information about the survey can be found in *ADU Market Description*, pg. 11.)

An accessory dwelling unit, or ADU, is a secondary living space constructed on a single-family lot, which may or may not be attached to the primary structure but which contains its own provisions for sleeping, cooking, and hygiene, and a separate entrance. Such units can take the famous "tiny house" form, or consist of converted basements or garages.[1] In Portland, it is required that they be up to 800 square feet in size. Essentially, an ADU has all of the features of a studio apartment; the difference is that an ADU can be constructed in an area zoned for single-family residential use.

The first goal of this report is to determine whether or not ADUs are priced at or below the market rate (thus increasing housing affordability). To that end, NERC has aggregated rental price data for ADUs and compared it to market rents in Portland neighborhoods[2] in order to show where ADUs are in fact increasing affordability.

Figure 1 is a map constructed using data from the 2017 survey of ADU owners. Twenty-eight respondents provided information required for this exercise, so it is important to note that this graph uses relatively few data points.[3] Rents for these units were divided by the center of the reported range—for example, an ADU reported in the 500-600 SF range was assumed to be 550 square feet—in order to arrive at PSF (per square foot) rents, which were subsequently compared to median rent for the neighborhood, provided by Johnson Economics. Thus, the map provides a visual illustration of relative ADU affordability: in the red and orange areas,

[1] It is important to note that "tiny houses" are not clearly defined by anything other than a small footprint, typically 500SF or less, while ADUs are functionally defined by the provisions mentioned above. A "tiny house" is not necessarily an ADU, and ADUs can be detached units greater than 500 square feet in size, as well.
[2] Provided by Johnson Economics
[3] To protect ADU owner privacy, neighborhoods are used rather than addresses or blocks.

ADUs were renting for higher than the median rent at time of survey, and in the blue and green areas, ADUs were renting for less. Yellow indicates that the PSF rent is within $0.25 of the neighborhood median. In 15 out of 24 neighborhoods, ADUs rented for less than the median, and in the remaining nine, they rented for more. In six neighborhoods, ADU rents fell within $0.25 of the PSF rent. Over all observations, ADUs rented for twelve cents less PSF than their neighborhood apartment counterparts.

For comparison, Figure 2 shows median PSF rent for the metropolitan area. Neighborhoods that contain the ADU units used in Figure 1 are shaded with hatching. Note that the areas where ADU rents are less expensive than the median (shaded blue or green in Figure 1) are often more expensive areas in which to rent (shaded orange or red in Figure 2), with exceptions. While the data points are few, the map shows that ADUs may be relatively cheaper in more expensive areas, and perhaps more comparable or expensive in areas where rents are lower in general. This would indicate that ADUs are increasing affordability in highly-desirable neighborhoods more than in lower-rent areas.

Figure 1: Comparison of ADU Rent and Median Rent (PSF)

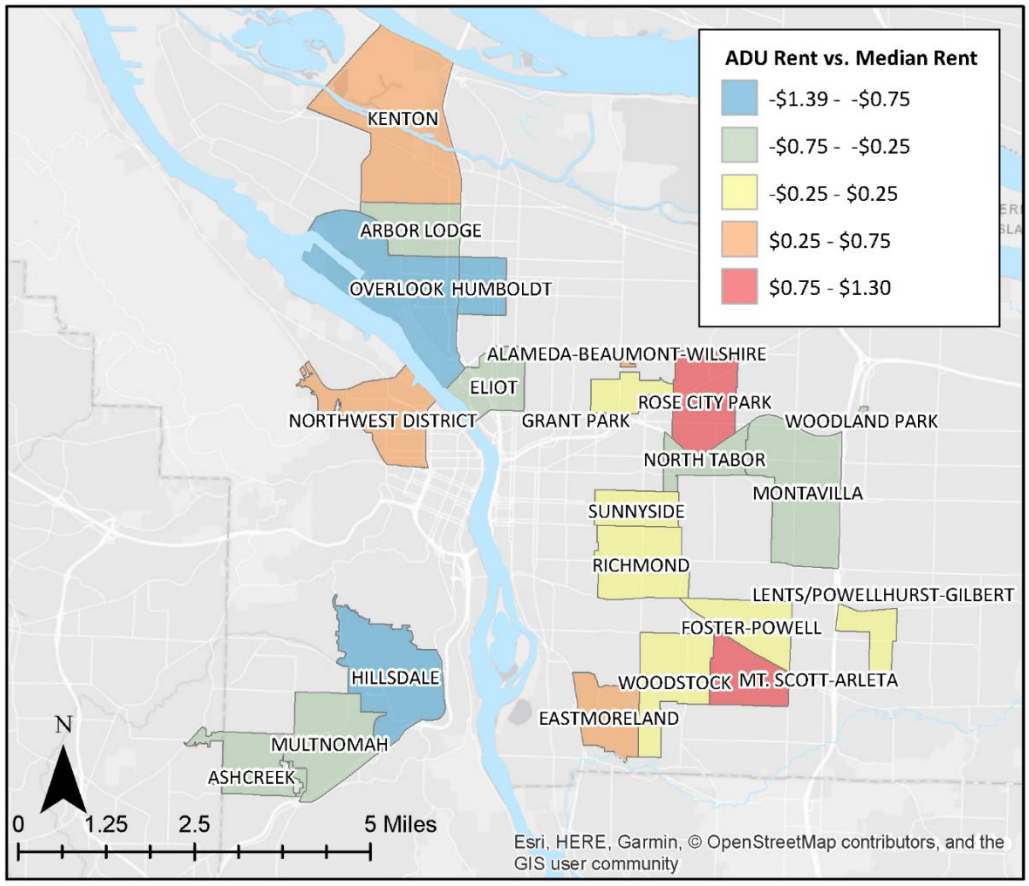
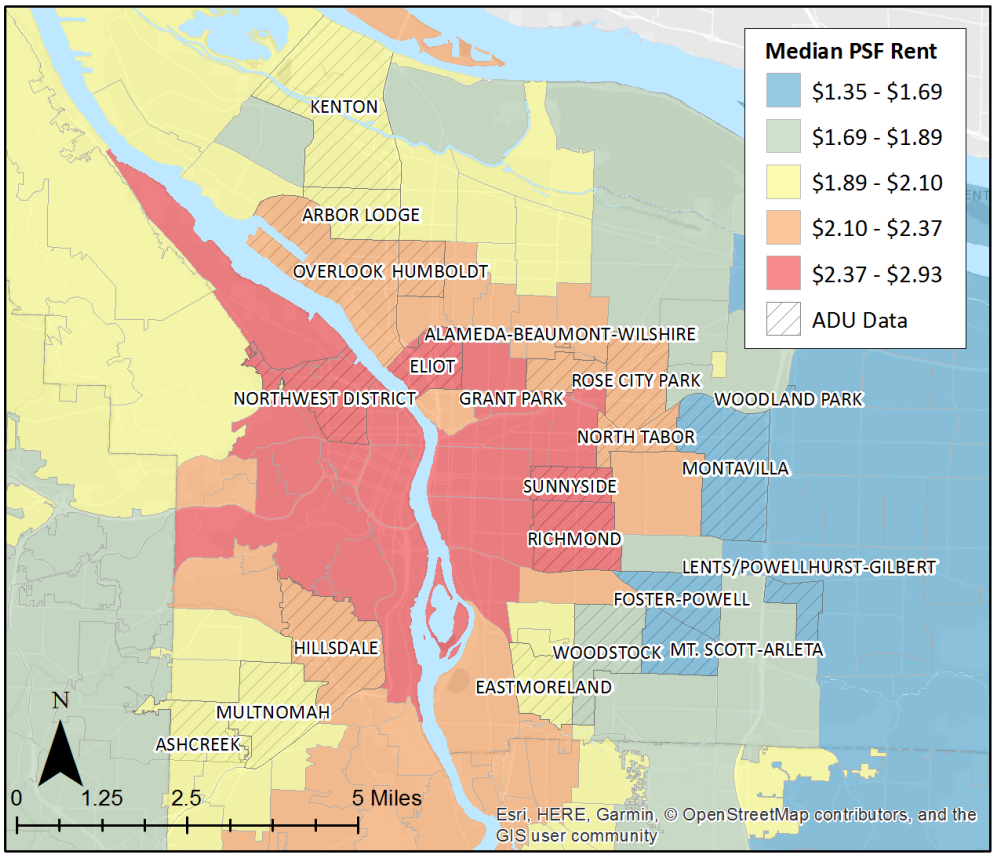


Figure 2: Median PSF Rent in the Portland MSA



This report finds that, on average, ADUs are less expensive per square foot than apartments in most Portland neighborhoods. Interestingly, the largest disparity between apartments and ADUs are in more expensive neighborhoods. The reasons for this, and whether this pattern would be true with more observations, would be a good focus for further research.

The second goal of this report is to establish a framework for assessing the efficacy of the SDC waiver to incentivize ADU construction for long term rental use (increasing housing supply and therefore affordability). To this end, NERC has constructed a set of proformas (outlines of projected costs and revenues) for ADUs constructed either with or without the SDC waiver, and used as either short-term or long-term rentals—that is, as places for visitors to stay for less than one month (as with Airbnb), or as standard rental properties that contribute to housing supply. Using assumptions gleaned from the best available data, these proformas show that when occupancy is above 50%, ADU owners will pay off construction costs more quickly if they forgo the waived fees and use their unit as a short term rental, but if occupancy is below 50%, long term rental is better option. While this estimate is based on assumptions rather than data, a subsidy policy akin to the SDC waiver must take into account this sort of tipping point, in order to ensure that the policy goal of increased affordability is adequately served.

While Portland has one of the most developed ADU markets in the U.S., it is still new enough to qualify as an "infant industry." As such, there are many unknowns in predicting what may become of this nascent market. NERC anticipates that for ADUs construction to grow significantly and have more of an impact on Portland's affordability problems, financing needs to become more tailored towards ADUs. This would create opportunities for a wider range of people to be able to afford construction. On this note, construction costs for detached ADUs may be too high to mass-produce affordable units: the recent ADU survey used in this report found a median price of $127,000 for detached units, in contrast to a median range of $65,000-$80,000 for garage, basement, and other ADU types. (Note: garage units can be either attached or detached.) If firms employ economies of scale and produce large numbers of similarly designed units, this should decrease the cost. Lastly, and least predictably, awareness of ADUs and the associated policies designed to incentivize them needs to increase for development to follow. Tracking the public's awareness of ADUs is another opportunity for future research.

Introduction

This report was researched and written by the Northwest Economic Research Center of Portland State University (PSU) in collaboration with the Institute for Sustainable Solutions (also at PSU) in order to explore the potential for accessory dwelling units (ADUs) to increase housing affordability in the City of Portland.

The Institute for Sustainable Solutions works to connect Portland State professors and students with public and private entities in order to accomplish goals and address problems related to equity, sustainability, and livability. In addition to the Institute's staff, who organize and conduct research related to the above topics, ISS has over 125 faculty fellows, who collaborate in research, and a student fellow program that provides its members with connections and real-world experience in the area of sustainability.

In October and November of 2017, ISS conducted an online survey of ADU owners and occupants, the results of which constitute the most exhaustive collection of data regarding ADUs in Portland. This survey is the primary source of data for this report. (More information about the survey can be found in *ADU Market Description*, pg. 11.)

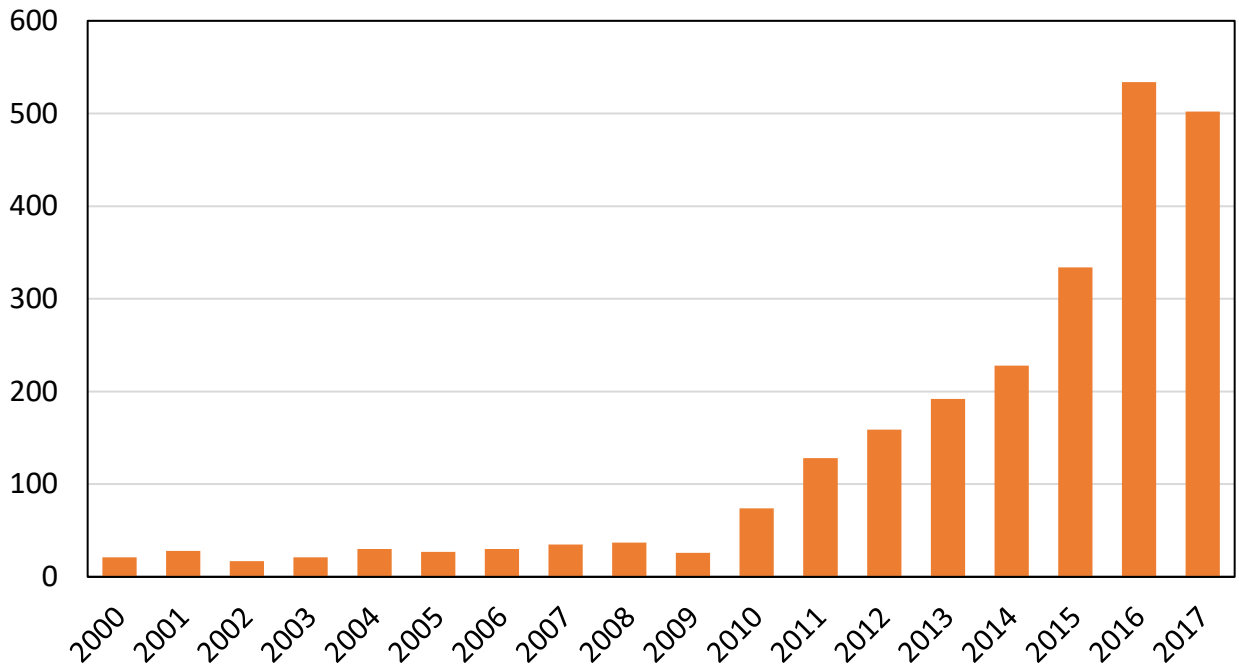
The following analysis is composed of two distinct parts. Following a brief exploration of the background on ADUs and affordability concerns and policies within Portland city limits, ADU rents are compared to median rents for several Portland neighborhoods (*Rent Analysis,* pg. 11) and sample proformas are used to explore the savings to homeowners provided by Portland's SDC waiver program for ADUs (*Proforma Analysis*, pg. 13).

Background

In 2010, the City of Portland first rolled out a new policy exempting certain residential structures from system and development charges (SDCs), which can total as much as $15,000. These structures, commonly called "granny flats" or the more formal "accessory dwelling units" (ADUs), might provide a partial solution to rising housing unaffordability by increasing housing density in areas zoned for single-family residential building without raising the kind of neighborhood controversy that multifamily projects can invite.

Since the policy's inception, building has increased dramatically, from about 50 units a year before the policy came into action to ten times that number in 2016 and 2017 (see Figure 3). On June 27th of this year, the Portland City Council passed an ordinance to extend the policy indefinitely, provided that the unit or house on the same lot are not used for used for short-term rentals (like Airbnb, for example) for a period of ten years after construction (a $400 charge per permit is levied in order to have SDC fees waived).[4] This revised policy went into effect on August 1st, 2018. If an ADU owner violates the terms of the waiver and uses their units as a short-term rental within the ten-year period, they are required to pay 150% of the waived total.

Figure 3: ADU Permits Issued by Year, 2000-2018, City of Portland



[4] Wickstrom, Matt. (June 27 2018.) City Council extends the SDC waiver for ADUs, with conditions. City of Portland Bureau of Development Services. Retrieved from PortlandOregon.gov/BDS.

Clearly, this unique residential subsector is on the rise—at the time of writing, a unique startup company called *Dweller* and headed up by former director of the Portland Development Commission Patrick Quinton is offering ADU construction for either $125,000 or cost-free with the condition that the company collect 60% of rent from the unit for 25 years, following which the homeowner will own the unit outright.[5]

This literature review will define ADUs, describe the current housing affordability crisis in Portland, and provide background on the ability of ADUs to increase affordability.

What is an ADU?

An accessory dwelling unit, or ADU, is a secondary living space constructed on a single-family lot, which may or may not be attached to the primary structure but which contains its own provisions for sleeping, cooking, and hygiene, and a separate entrance. Such units can be detached structures, or consist of converted basements or garages. In Portland, it is required that they be less than 800 square feet in size. Essentially, an ADU has all of the features of a studio apartment; the difference is that an ADU can only be constructed in an area zoned for single-family residential use.

In Portland, ISS survey results (referenced in greater detail below) found that 43% of respondent ADU owners had detached units, and 38% had built new structures. Forty-two percent described their ADU as attached to the primary structure, evenly split between basement and garage renovations. The median unit size is 500-600 SF, and 82% of ADUs are reported as either one-bedroom or studio units (17% were described as two-bedroom). At time of survey, just over half (53%) of owners reported that their unit was serving as somebody's primary residence, and 31% stated that the current use was for short-term rentals (less than one month).

ADU Policy in Portland

In Portland, policy efforts to promote ADU construction in order to increase affordability have been underway for years.

1997: *The City amends regulations to allow homeowners to build ADUs by right (i.e., without seeking a conditional use permit.*

2010: *System Development Charges (SDCs) are waived for all ADU construction.*

2015: *Portland's Accessory Structures Zoning Code Update is passed, loosening design restrictions and allowing 2-story units.*

2018: *The SDC waiver policy is amended to require owners to use the ADU as a long-term rental for a period of ten years, or be subject to a penalty equal to 150% of the waived fees.*

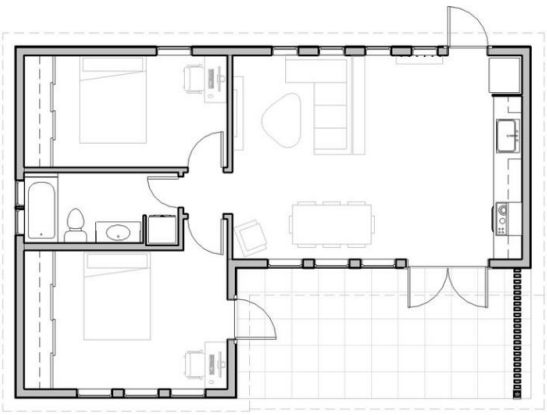
[5] Law, Steve. (June 5 2018.) ADUs out of your price range? Think again. Portland Tribune. Retrieved from PortlandTribune.com.

Figure 4: ADU Example Images

Detached ADU

Basement conversion (interior)

Attached ADU under construction



Floor plan for a 2-bedroom ADU

All images from AccessoryDwellingUnits.com

What is housing affordability?

Measures of housing affordability attempt to quantify how expensive it is to rent or own a home in a defined area, given local incomes. In the United States, if rents or mortgage payments exceed 30% of median income, the area is considered to be unaffordable with regard to housing, and individuals living under these conditions are described by the US Department of Housing and Urban Development (HUD) as "cost-burdened." If the portion of income is in excess of 50%, said households are "extremely cost-burdened." The Joint Center for Housing Studies of Harvard University estimates that in 2015, just under 33% of all households nationwide were cost burdened—24% of homeowners, and 48.3% of renters.[6] These rates are

[6] Joint Center for Housing Studies of Harvard University. (2017.) The State of The Nation's Housing. Retrieved from JCHS.Harvard.edu.

reflected in the Portland area, where 48% of all renters, and a quarter of all homeowners, were cost-burdened in the same year. (Renters and owners experienced extreme cost burdens at 24% and 10% rates, respectively.)[7]

Housing affordability in the Portland metropolitan area has come to the fore recently due to higher levels of net migration since the recent recession, especially in the densely-populated counties (Clackamas, Washington, and Multnomah).[8] This increased flow of migrants indicates a healthy economy with promising employment prospects, but also poses a challenge—the housing stock in the city proper is limited by zoning restrictions and the Urban Growth Boundary. Construction of new units continues, but growth appears to be levelling off somewhat from the breakneck construction and permitting levels observed in 2014 and 2015, as housing prices do the same. The Portland MSA has fallen from the top of Zillow's Case-Schiller 20-Metro housing price growth index to the middle of the pack. Nonetheless, the Portland Housing Bureau's Fall 2017 State of Housing report finds that out of 24 total city neighborhoods analyzed, a three-person household earning 60% of the average median income can affordably rent in only two neighborhoods as of 2017 (down from four in 2016). The average senior, single-mother, and Black, Latino, or Native American household could not affordably rent anywhere in the city.[9]

Generally speaking, affordability is an increasing concern for those who earn less money. While that might seem obvious, the real crux of the issue is not so simple—housing inventories in the lower and middle expense tiers have been falling more rapidly since the recent recession (Figure 5), while prices increase apace with higher-tier housing (Figure 6). At the same time, income growth is increasingly concentrated in the top-earning quintile, meaning that middle- and especially lower-income groups face a market that is rising too quickly for wages to keep up, partly as a result of increasing inventory. While a recent influx of luxury units into the Portland metro area has resulted in a surplus of units at that level, it will take an uncertain number of years for falling prices to filter down to those who really need the break, necessitating further measures to increase affordability in the meantime.

[7] Joint Center for Housing Studies of Harvard University. "Millions of Americans Burdened by Housing Costs in 2015." Table. Retrieved from JCHS.Harvard.edu.
[8] Population Research Center, Portland State University. Population Estimates and Reports. Retrieved from PDX.edu/PRC
[9] Portland Housing Bureau (2017.) State of Housing in Portland: Fall 2017. Retrieved from PortlandOregon.gov.

Figure 5: Housing Unit Inventory by Pricing Tier, Portland MSA

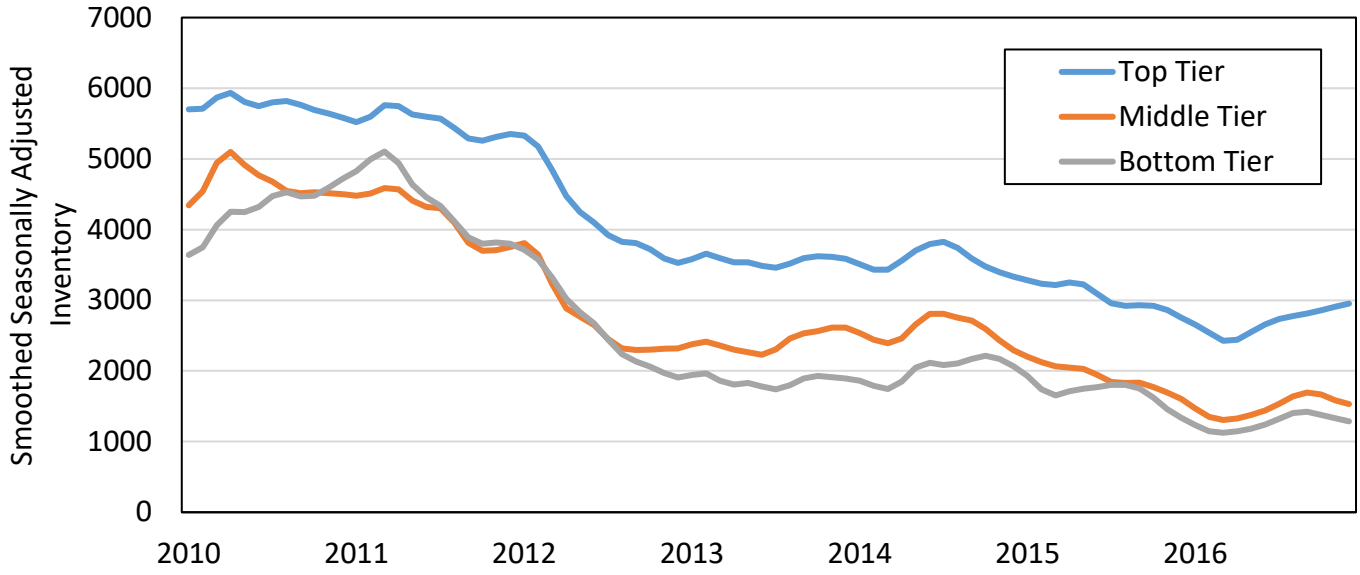
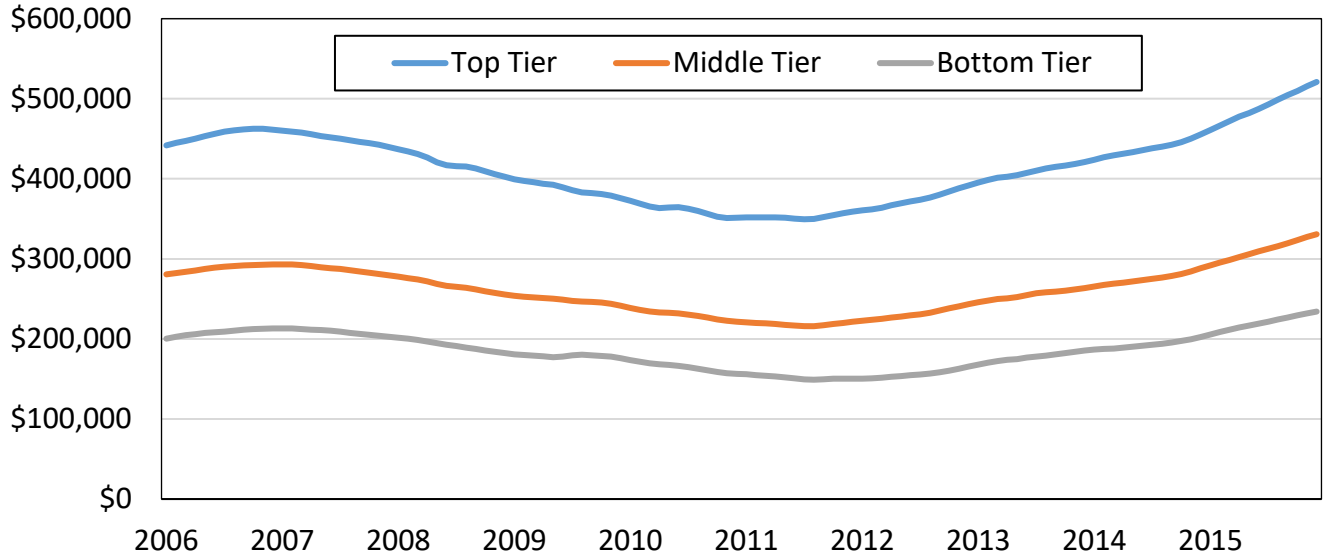


Figure 6: Median House Price by Value Tier, Portland MSA



In recent years, the City has attempted to increase affordable housing through the inclusionary housing policy (requiring multifamily projects to include a certain number affordable units) and multiple-unit limited tax exemption for structural improvements for projects with affordable units. Analysis of the policy's effects is hampered by a rush of permitting prior to implementation (meaning that it is unclear whether the measures are increasing or decreasing affordability in Portland).

ADUs and affordability

Where do ADUs fit into this picture? Unlike other measures that increase density, they do not require that a single-family residential area be rezoned, and have less of an impact on neighborhood character than traditional multifamily projects. The SDC waiver has proven a motivating policy for homeowners. In the year prior to the policy's initial passage (2009), 24 permits for ADUs were issued, and seven years later, that number had grown to 615—ten percent of unit permits for the year.[10] (It is important to note that the allowed size for an ADU increased that year as well, to 800 SF.)

However, simply increasing the housing supply is only part of the affordability problem—the price of housing matters as well. While an increase in higher-rent properties will eventually permeate the market down to the lower tiers, this takes time that households in duress cannot afford, literally. Alternately, it could be that those building ADUs are using them as short-term rentals (as this practice was not prohibited in the waiver policy prior to its most recent iteration), meaning that the housing supply is not affected in real terms at all. While a 2017 survey of ADU owners and occupants by the Portland State Institute for Sustainable Solutions indicates that this isn't the case for the majority of ADU owners (a third said that they were currently using their ADU for this purpose), it is worth noting that in 2013, before short-term rentals were formally permitted in ADUs, about 200 permits were issued. In August of 2014, said rentals became explicitly legal, and the following year the number permitted nearly doubled, resulting in the largest proportional increase in the years since the SDC waiver. This is likely due to a combination different factors, including increased awareness of the policy, and the growth of Airbnb.

To figure out whether or not ADUs are priced at or below the market rate (thus increasing housing affordability), NERC has aggregated rental price data for ADUs and compared it to market rents in Portland neighborhoods[11] in order to show where ADUs are in fact increasing affordability. The next section will discuss this in further detail.

ADU Market Description

In October and November of 2017, the Institute for Sustainable Solutions at Portland State University conducted an online survey of ADU owners and occupants, the results of which constitute the most exhaustive collection of data regarding ADUs in Portland. Out of 4,658 mailers sent to addresses generated using permit data (two sent to each property, one for the owner and one for a possible tenant), 516 respondents went online and completed the survey

[10] Wickstrom, Matt. (June 27 2018.) "City Council Extends the SDC Waiver for ADUs, with Conditions." City of Portland Oregon Bureau of Development Services. Retrieved from PortlandOregon.gov/BDS.
[11] Provided by Johnson Economics

in exchange for a $10 gift certificate. Of these respondents, 236 owned an ADU but did not live in it, 142 lived in an ADU but did not own it, 44 owned the ADU and lived in it, 74 were currently building an ADU, and 19 had filed a permit but not yet started construction.

Among ADU owners, the most common age group was 35-54 (about half of respondents), with 12% falling below that age and the remainder above it. (ADU occupants were younger—half falling in the 21-34 group.) Two-thirds lived in the main structure with one other person, and 56% reported no children living in the household. Eighty percent identified as white, 5% as Asian, and 7% selected multiple races, with the remainder falling mostly under "other" or missing responses. Half of the surveyed owners reported annual household income of greater than $100,000, and only 15% reported income below $60,000; median household income in Portland is $68,676 (in 2016, the most recent year for which data is available). With regard to education, 78% had either a four-year or professional degree (assumed to be equivalent to a masters). More than two-thirds of owner respondents were married or in a long-term committed relationship.

Rent Analysis

A primary goal of this report is to determine how affordable ADUs are relative to other types of units in a given area. Johnson Economics provided NERC with median rent estimates for 800 square foot apartments by neighborhood in Portland. NERC then compared this with the subset of survey respondents that rent ADUs sized between 400-800 square feet to strangers. This excludes renting to friends and family that might get a discount and make ADUs appear more affordable than the reality.

Figure 1 is a map constructed using data from the 2017 survey of ADU owners. Twenty-eight respondents provided information required for this exercise, so it is important to note that this graph uses relatively few data points.[12] Rents for these units were divided by the center of the reported range—for example, an ADU reported in the 500-600 SF range was assumed to be 550 square feet—in order to arrive at PSF (per square foot) rents, which were subsequently compared to median rent for the neighborhood, provided by Johnson Economics. Thus, the map provides a visual illustration of relative ADU affordability: in the red and orange areas, ADUs were renting for higher than the median rent at time of survey, and in the blue and green areas, ADUs were renting for less. Yellow indicates that the PSF rent is within $0.25 of the neighborhood median. In 15 out of 24 neighborhoods, ADUs rented for less than the median, and in the remaining nine, they rented for more. In six neighborhoods, ADU rents fell within

[12] To protect ADU owner privacy, neighborhoods are used rather than addresses or blocks.

$0.25 of the PSF rent. Over all observations, ADUs rented for twelve cents less PSF than their neighborhood apartment counterparts.

For comparison, Figure 2 shows median PSF rent for the metropolitan area. Neighborhoods that contain the ADU units used in Figure 1 are shaded with hatching. Note that the areas where ADU rents are less expensive than the median (shaded blue or green in Figure 1) are often more expensive areas in which to rent (shaded orange or red in Figure 2), with exceptions. While the data points are few, the map shows that ADUs may be relatively cheaper in more expensive areas, and perhaps more comparable or expensive in areas where rents are lower in general. This would indicate that ADUs are increasing affordability in highly-desirable neighborhoods more than in lower-rent areas.

Figure 1: Comparison of ADU Rent and Median Rent (PSF)

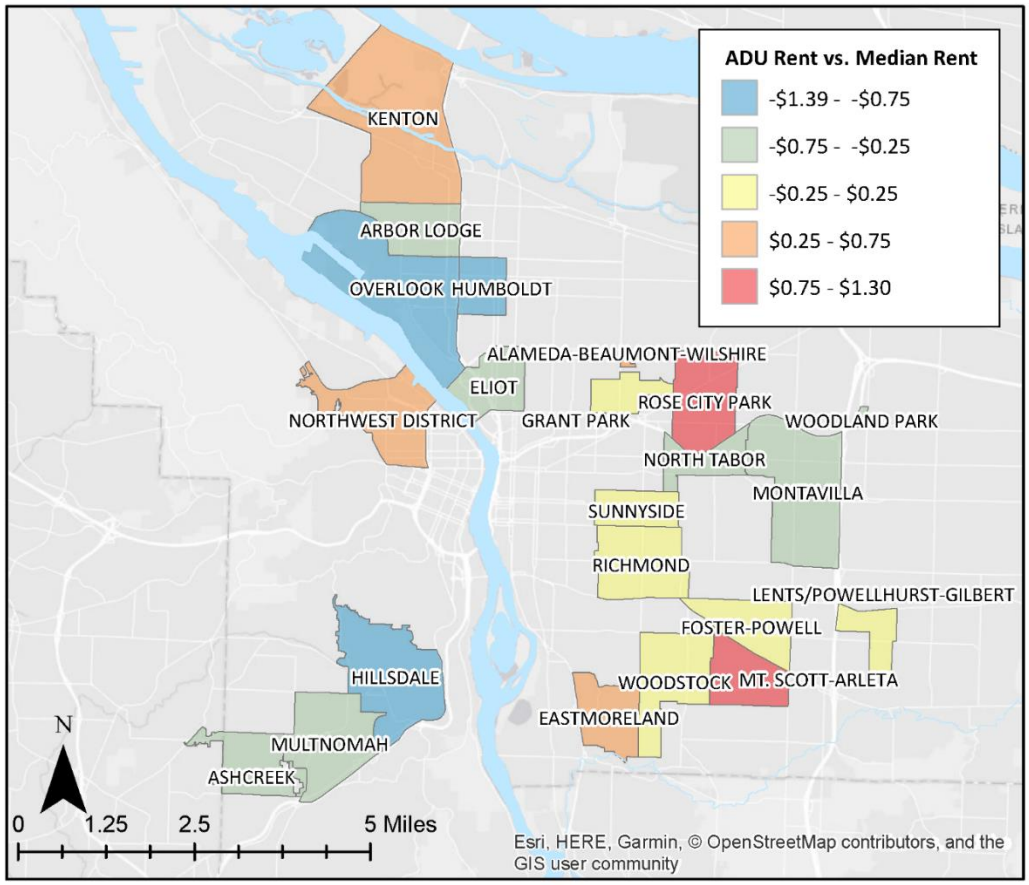
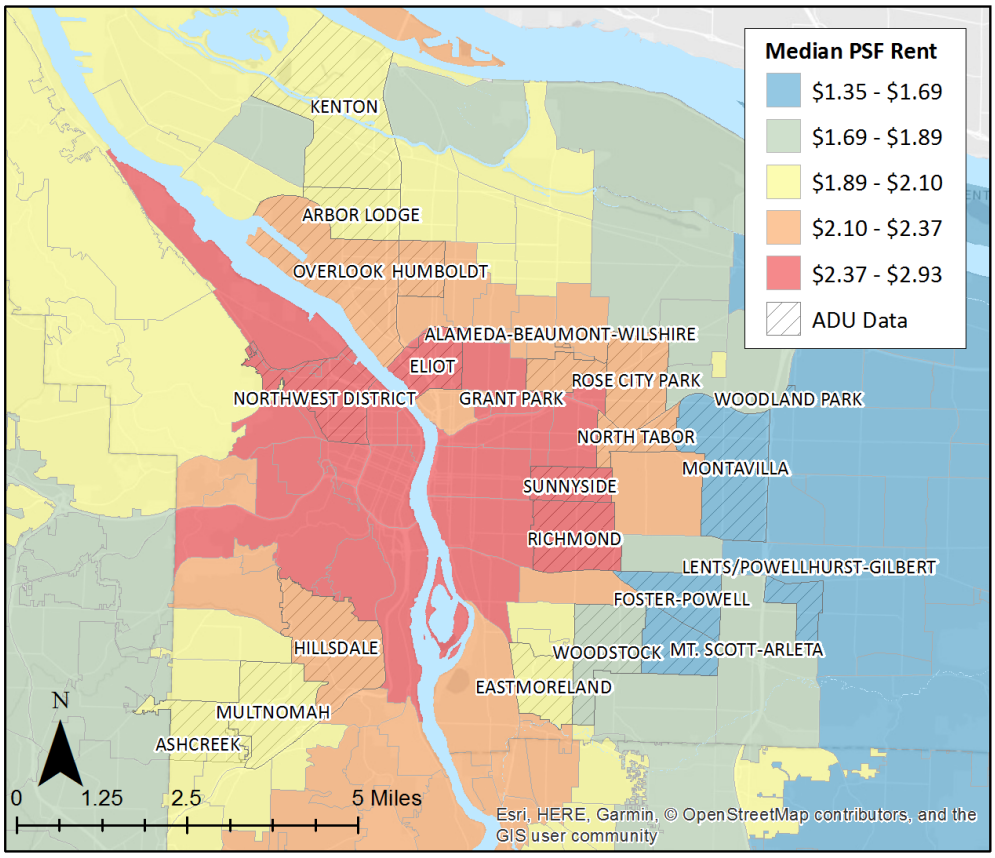


Figure 2: Median PSF Rent in the Portland MSA



Proforma Analysis

Proformas are a financial tool used to highlight certain aspects of an investment opportunity. More common in commercial development, they focus on figures such as the cash flow to the investor or an internal rate of return for a specific project. However, an ADU owner would continue to own and reside within the property, unlike in the typical development project for which proformas are utilized. Since ADU construction can occur in a variety of different circumstances, the following proforma should be considered a “thought experiment” to help illustrate homeowners’ considerations and provide a basis for the exploration of future fee waivers as a policy tool to increase affordability in Portland by way of new ADU housing supply For our purposes we focus on the time to pay off the loan and the return on an initial cash investment. We also compare the results for ADU construction with and without SDC waivers across long and short-term uses of the units, in order to determine under what conditions homeowners are likely to choose which use, and therefore whether or not the SDC waiver can in fact increase affordability

Proformas calculate expected revenues and construction and operation costs, then compare the difference, deemed Net Cash Flow, to the costs of financing. The accounting information in

the following proforma estimation comes from the 236 ADU owner responses to an ISS survey. Generally conservative assumptions, all mentioned here, were made to utilize survey data to estimate the cost effectiveness of ADU projects. NERC emphasizes that these market averages are unlike the project specific estimates used in typical proformas and, therefore, the analysis that results is likewise nontraditional.

First, in estimating rental revenues, responses to short-term rates are broken into $50 ranges from $0 to $250. Of these, 98% were within 3 ranges: $50-$100, $100-$150, and $150-$200. Responses were attributed to the medians of these ranges, and we use their average to approximate a short-term rate of $104.41. This rate is within the realistic range of local hotel prices, and competitive with private "suite" rooms on rental sites. An average long-term rental rate of $1,217.50 is reported within the survey, as well as median utilities cost of $40. Within the proformas, the median utilities cost is assumed included in the rates, and therefore subtracted from revenues.

The reported short-term rental days per year is a possible area of contention within this estimation. Two-thirds of respondents to the survey indicated they rent their ADU for an open-ended "greater than 90 days per year." An average occupancy cannot be calculated, as with rental rate above, without an assumption on the actual average rental days for this group, and with such a large group the cost effectiveness of short-term ADU rental hinges on this assumption. For illustrative purposes, we use occupancy rates of 40 and 60 percent. These rates are similar to rates for other cities of 33-66 percent reported by Mashvisor, a compiler of Airbnb data.[13] The rates are then used to calculate the monthly short-term rental revenue. For long-term rentals, NERC assumes a vacancy rate of 5% (or occupancy rate of 95%), a standard value for rental housing.

Due to their absence from the survey, estimating maintenance and operation costs requires further assumptions. A brief review of cleaning service fees in the Portland area puts costs around $50 per cleaning. Utilizing survey data in the same manner as in rental rates above, we calculate an average stay of 3.4 nights. Thus, the cost per night is $14.70 or around $183 per month for cleaning. Additionally, a general rule of thumb for property maintenance is that a minimum of 1% of the cost of the structure should go to upkeep per year. For the estimated construction cost, described below, this comes to around $93 per month in maintenance costs accrued to both rental lengths.

[13] Andreevska, Daniel. (November 23 2016.) What Kind of Airbnb Occupancy Rate Can You Expect? Retrieved from Mashvisor.com

Similar to the estimation of short-term rental rate above, we estimate the cost of construction using the medians of the middle 3 ranges ($50k-$100k, $100k-$150k, and $150k-$200k) of reported construction costs. These ranges account for 78% of respondents, and result in an estimated construction cost of $111,445.

To evaluate the impact of SDC waivers on cost effectiveness, we need an estimate of the average SDC costs. In application, this value may vary widely as an upgraded basement may require lower SDCs while the construction of a new structure on the property may involve considerable SDCs. After reviewing SDC charges and assuming the connection of a "micro-unit" to the sewer line with 50ft of new line, storm-water system and land use charges, and the installation of the smallest sized water meter, NERC estimates average SDCs to total $10,838. These costs assume utilities connections require only an added smaller unit and not an expansion of the entire property's connections, which may add many thousands more. Implicit in this, NERC assumes the new unit is detached. (Note that there is a $400 processing charge to have the SDCs waived; this is denoted in the proforma table in the "SDC or Waiver" row for short-term and long-term rentals with the waiver.)

With regard to financing, the survey reports that around 45% of ADU owners primarily used cash while a similar percentage financed construction with credit of some sort. Of those who used cash, 44% used cash for up to half of the construction cost. For simplicity, we assume that half of the construction costs are paid from cash and the other half, plus any SDCs, is financed with a 15-year home equity line of credit (HELOC)[14]. We use a HELOC rate calculator on the median home value in Portland ($425,500)[15], assuming 50% of the home's value is still owed, to generate a current market interest rate of 4.84%. Further assuming that all rental revenue in excess of operating costs is paid toward the HELOC, we calculate the Financing Interest and Time to Payoff Loan. Also, to indicate the return to the owner, beyond increase in equity, we include calculations of Net Cash Flow to Owner and Total Cash-on-Cash Return. These incorporate revenue, in build year's dollars, over the 15-year lifetime of the HELOC.

Tables 1 and 2 show the proforma calculations for two occupancy rates. Assuming 40% occupancy and no SDC waiver, HELOCs for long-term and short-term ADU properties take 76 and 82 months to pay off, respectively. On top of reduced SDC cost, an SDC waiver saves ADU owners around an additional $3,500 for long-term rentals and $3,800 for short-term rentals in financing interest. Also, an SDC waiver can shorten the time to pay off the loan by 14 months

[14] U.S. Bank National Association. Home equity rate & payment calculator. Accessed July 2018.

[15] Zillow, Inc. Portland Home Prices & Values. Accessed July 2018.

for long-term rentals and 15 months for short-term rentals. Of course, following the August 2018 implementation of the fine for short-term rental in ADUs for which the SDCs were waived, the penalty of 150% of the total charges would considerably increase costs to owners found in violation. Here, the assumption is that the unit in question was permitted prior to that implementation date, and is therefore exempt from that penalty.

Table 1: Proforma assuming 40% Occupancy

	Long-term Rentals		Short-term Rentals	
	With SDC Waiver	Without SDC Waiver	With SDC Waiver	Without SDC Waiver
Revenues				
Average Revenue Per Unit	$ 1,119	$ 1,119	$ 1,230	$ 1,230
Less Operating Costs	$ 93	$ 93	$ 273	$ 273
Annual Net Revenues	$ 12,309	$ 12,309	$ 11,494	$ 11,494
Loan Lifetime Revenue	$ 184,636	$ 184,636	$ 172,407	$ 172,407
Costs				
SDC or Waiver	$ 400	$ 10,838	$ 400	$ 10,838
Sitework & Building Construction	$ 111,446	$ 111,446	$ 111,446	$ 111,446
Management & Overhead	$ -	$ -	$ -	$ -
Total Costs	$ 111,846	$ 122,283	$ 111,846	$ 122,283
Net Cash Flow Before Financing	$ 72,790	$ 62,352	$ 60,561	$ 50,124
Financing Interest	$ 7,302	$ 10,764	$ 7,911	$ 11,703
Net Cash Flow to Owner/Operator	$ 65,488	$ 51,588	$ 52,651	$ 38,421
Cash Investment	$ 55,723	$ 55,723	$ 55,723	$ 55,723
Total Cash-On-Cash Return	117.5%	92.6%	94.5%	69.0%
Months to Pay Off Loan	**62**	**76**	**67**	**82**

With 60% occupancy, the time to pay off the loan falls to 49 months for a short-term rental property, and is shortened by another 8 months with an SDC waiver. According to the ISS survey, the median expected time to pay off construction costs was 84 to 108 months, and only 40% of respondents expect to pay off the costs in under 72 months.[16] Thus under our assumptions, all but one rental outcomes exceed the owners' expectations.

[16] It should be noted that this figure is inclusive of all ADU owners – regardless of how aggressively they are attempting to pay off their loan.

Table 2: Proforma assuming 60% Occupancy

	Long-term Rentals		Short-term Rentals	
	With SDC Waiver	Without SDC Waiver	With SDC Waiver	Without SDC Waiver
Revenues				
Average Revenue Per Unit	$ 1,119	$ 1,119	$ 1,866	$ 1,866
Less Operating Costs	$ 93	$ 93	$ 362	$ 362
Annual Net Revenues	$ 12,309	$ 12,309	$ 18,038	$ 18,038
Loan Lifetime Revenue	$ 184,636	$ 184,636	$ 270,569	$ 270,569
Costs				
SDC or Waiver	$ 400	$ 10,838	$ 400	$ 10,838
Sitework & Building Construction	$ 111,446	$ 111,446	$ 111,446	$ 111,446
Management & Overhead	$ -	$ -	$ -	$ -
Total Costs	$ 111,846	$ 122,283	$ 111,846	$ 122,283
Net Cash Flow Before Financing	$ 72,790	$ 62,352	$ 158,723	$ 148,286
Financing Interest	$ 7,302	$ 10,764	$ 4,756	$ 6,910
Net Cash Flow to Owner/Operator	$ 65,488	$ 51,588	$ 153,967	$ 141,376
Cash Investment	$ 55,723	$ 55,723	$ 55,723	$ 55,723
Total Cash-On-Cash Return	117.5%	92.6%	276.3%	253.7%
Months to Pay Off Loan	**62**	**76**	**41**	**49**

In summary, the relative benefits of short or long-term rental largely depend on the attainable occupancy rate for short-term rentals. According to our calculations, the point of contingency is at 43% occupancy for units with the waiver. If an occupancy rate of higher than 43% is attainable, short-term rental is the financially better option. Conversely, long-term rental is more beneficial if occupancy is below 43%. Again, note the assumption that the unit under question here was permitted prior to August of 2018 and is therefore not subject to the fine equivalent to 150% of SDCs for short-term rental in a waived unit.

At present, it makes most sense to compare short-term use with no waiver to long-term use with a waiver: if occupancy is at 50%, it is estimated that a unit that paid full SDCs and is used for short-term rental will take 62 months to pay off in full, as will a long-term rental with waived SDCs. So, we might consider 50% occupancy as the tipping point in deciding whether to have SDCs waived, or paying them and using the unit as a short-term rental.

Further assumptions

This calculation does not account for any non-"wear-and-tear" damage or cleaning service required after long term rentals as it is assumed to be incorporated into rental security deposits. There are also no costs included for the costs of property management services for advertising or booking the rental property. Since all revenue is assumed to go to the loan payment, any time or effort spent by the owner is considered unpaid "sweat equity." Any

increase to property tax associated with increased home value is also not included in the proforma estimation.

Conclusion and Further Research

This report found that, on average, ADUs are less expensive per square foot than apartments in most Portland neighborhoods. Interestingly, the largest disparity between apartments and ADUs are in more expensive neighborhoods. The reasons for this, and whether this pattern would be true with more observations, would be a good focus for further research.

Additionally, this report has explored the policy incentive for homeowners to use their unit for long-term rental only; namely, the SDC waiver with penalties for violation fully implemented in August of 2018. Using a highly theoretical proforma based on assumptions using the best available estimates for costs and rental rates, NERC finds that owners with existing ADUs at the time of implementation are best off using their units for short-term rentals if occupancy exceeds 43%, while those undergoing permitting after implementation are financially best off forgoing the waiver and renting on the short-term market if they expect occupancy to exceed 50%.

While Portland has one of the most developed ADU markets in the U.S., it is still new enough to qualify as an "infant industry." As such, there are many unknowns in predicting what may become of this nascent market. NERC anticipates that for ADUs construction to grow significantly and have more of an impact on Portland's affordability problems, financing needs to become more tailored towards ADUs. This would create opportunities for a wider range of people to be able to afford construction. If firms employ economies of scale and produce large numbers of similarly designed units, this should decrease the cost. Lastly, and least predictably, awareness of ADUs and the associated policies designed to incentivize them needs to increase for development to follow. Tracking the public's awareness of ADUs is another opportunity for future research.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