Living in Pele's Workshop: Using Community-informed Planning to Address Housing Needs in Puna, Hawai'i

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LIVING IN PELE’S WORKSHOP:
USING COMMUNITY-INFORMED PLANNING TO ADDRESS HOUSING NEEDS IN PUNA, HAWAI’I

TAYLOR WEBB
ACKNOWLEDGEMENTS

I would like to thank my committee members: James Miller, Tammi Laninga, and Nicholas Zaferatos for their support and contributions to my research. They have each provided invaluable insight and encouragement throughout my program.

I would also like to thank the Western Washington University Research and Creative Opportunities Grant program; the College of the Environment Small Grant as well as the Discretionary Fund; and the Sustainability, Equity, and Justice Fund for supporting my research through grant funding. My work would not have been possible without these generous contributions.

I would also like to thank the many Hawaii County staff and other key stakeholders in the area for providing their technical expertise. The hard work and passion they are putting into the Puna District and the county to improve the lives of all residents is evident and appreciated by many including myself.

Most importantly, I would like to thank all of the interview and survey participants for contributing to my research. Not only were these residents willing to participate in my research, but they were also incredibly gracious hosts as well as genuinely kind, interesting, spirited, and generous. The knowledge I have gained from the participants is an unparalleled and extremely special experience.

THANK YOU | MAHALO NUI

Interview Participants

Amadeo
Andrea "Drea"
Carol
Chris & Holly
Dawn
Donna & Family
Ferrand
Heather
Jon
Kalehua & Keali'i
Kendra
Kipu
Leimana
Margaret
Smiley

Hawai'i County Staff & Key Stakeholders

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Darryl Oliveira, HPM Safety and Internal Control Manager
Garrett Smith, Recovery & Redevelopment Manager, County of Hawai'i
Janice Ikeda, Executive Director, Vibrant Hawai'i
Jen Myers, Disaster Recovery Communications Specialist, County of Hawai'i
Julie Leialoha, CDBG-DR Program Manager
Michael Yee, Housing & Community Development Specialist VI, County of Hawai'i
Patti Pinto, Recovery and Redevelopment Assistant, County of Hawai'i
Robert Agres, Disaster Recovery Engagement Manager, County of Hawai'i
Suzie Osborn, Head of School, Kua O Ka Lā Public Charter School
DISCLAIMER ON POSITIONALITY

It is important to note that although I conducted my research in Puna, Hawai‘i, I am not a resident of Hawai‘i or the community of Puna nor am I of Hawai‘ian descent. I was fortunate enough to be able to conduct my field research in Puna over the span of two weeks. While I was graciously welcomed by all the participating Puna residents as well as key stakeholders in Hawai‘i County, I will never be able to hold the same inherent knowledge of the land, culture, traditions, and spirit of Puna as the residents. The goal of my research is to amplify the voices of the residents and to incorporate their needs and desires into policy recommendations that may better serve them, their families, and the community as a whole.

As an outside researcher, I hope to hold up a mirror to the District of Puna and bring to the surface the primary concerns affecting the residents as well as illuminate the best aspects of the community. I have no local political ties or affiliations, and I do not stand to personally gain anything from this report. My only hope is to uplift the desires of the community and affect positive change, even if it is in a small way.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>1</td>
</tr>
<tr>
<td>DISCLAIMER ON POSITIONALITY</td>
<td>2</td>
</tr>
<tr>
<td>INTRODUCTION &amp; PURPOSE</td>
<td>4</td>
</tr>
<tr>
<td>RESEARCH</td>
<td>11</td>
</tr>
<tr>
<td>ANALYSIS</td>
<td>30</td>
</tr>
<tr>
<td>POLICY RECOMMENDATIONS</td>
<td>36</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>39</td>
</tr>
<tr>
<td>CITATIONS</td>
<td>41</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>i</td>
</tr>
</tbody>
</table>
INTRODUCTION & PURPOSE

The purpose of this research project is to understand the ways in which the current land use regulations in Puna, Hawai‘i have impacted accessibility to a variety of affordable housing forms. The 2018 Kīlauea eruption and COVID-19 pandemic have exacerbated issues in the community that were already prevalent in the area including rising housing costs, lack of housing options, and insufficient infrastructure and access to essential services. As more people continue to move into the Puna District, these issues are becoming intensified.

The lava-flow hazard zones on the island add an additional layer of complexity to the housing issues facing the district because most financial institutions will not approve mortgages in zones 1 and 2 since it is extremely difficult to get insurance on properties in these areas due to the higher probability of lava inundation in volcanic events (Selman, 2021). Approximately 1/3 of Puna is located in lava zones 1 and 2; the district is roughly indicated by the black box in Figure 1.

With these complexities in mind, I utilized a mixed-method research approach to study both the physical and social qualities of Puna including an analysis of the housing-related policies and regulations affecting the community, identification of the existing housing typologies throughout the district, and evaluation of the housing experiences of the residents. The data gathered was analyzed to determine the extent to which housing needs are being met. Using these community-informed planning techniques, I have outlined several policy changes that could increase access to a range of housing typologies that are affordable to Puna residents and better satisfy the residents’ housing needs.

Figure 1: Map showing lava-flow hazard zones on the island of Hawai‘i. The black box was added to roughly indicate the boundaries of the Puna District. Wright, et al.
About Puna, Hawai‘i

The State of Hawai‘i is made up of eight islands that span over 1,523 miles (about 2,451 km) and are located in the Central Pacific Ocean (Geography of Hawai‘i, 2022), each a former or active volcano. Puna is one of nine districts on the largest island of Hawai‘i, often referred to as the Big Island. The Puna District is located south of the capital of Hawai‘i, Hilo, on the easternmost tip of the island as seen in Figure 2 below. It is a large, rural district that is roughly 500 square miles (Townscape, Inc., 2005) or about the size of the entire island of O‘ahu (Britannica, n.d.) or Kaua‘i (Geography of Hawai‘i, 2022).

In the late 1950s, investors from Denver, CO purchased 12,000 acres in Puna, subdivided the land into 4,000 lots and began selling them igniting the Big Island subdividing boom which halted almost a decade later after almost 80,000 lots had been created on the island (Cooper and Daws, 1990). The land had little to no economic value and, largely unbeknownst to the buyers, the lots were located on volcanic lava rock and in high-risk zones for future volcanic activity making it difficult for landowners to construct homes (Cooper and Daws, 1990).

Since then, the Puna District has experienced multiple volcanic eruptions with the most recent being the 2018 Kīlauea eruption in which 8,448 acres of land were inundated with lava, 700 homes were destroyed, and 3,000 residents were displaced with an estimated $237 billion in unmet housing needs (Hawai‘i County Consolidation Plan, 2020).

Figure 2: Map of Hawai‘i Island Districts. County of Hawai‘i.
Madame Pele & Her Workshop

Puna, meaning “well-spring” from its many rains, is regarded as one of the most sacred areas in all of Hawai‘i (Matsuoka et al, 1996, p. 33). Cultural tradition states that Kīlauea is the home of the goddess, Pelehonuamea or Pele (Yamanaka, n.d.) depicted in Figure 3, making the volcano and surrounding area sacred land (Puna Community Development Plan Steering Committee, 2008). Throughout this report, Pele will be referred to as Madame Pele, Tūtū (grandmother), or Tūtū Pele interchangeably.

Pele is the goddess of fire and volcanoes and is known as “she who shapes the sacred land”, and she can appear as a beautiful young woman or as an old woman when she is angered (Yamanaka, n.d.). It is commonly known that she will bring misfortune to anyone who disrespects her by taking her sacred lava rock, and many people will bring her offerings to ensure she remains appeased (Wigington, 2019).

Figure 3: Mural of Madame Pele at Pahoa Neighborhood Community Center. Taylor Webb.
Puna is often referred to by locals as Pele’s workshop where the goddess is continually creating and recreating the land in the district (Puna, 2017) from the outpouring of magma. The land is ready for human use again only after new vegetation regenerates on the newly formed land (Matsuoka et al, 1996, p. 33-36). People often place coconuts in the newly formed lava rock as seen in Figure 4; when the coconuts begin to grow, then it is deemed safe to return to the area once again (R. Agres, personal communication, 2022). Due to the cyclical nature of the destruction and creation that comes with lava, Hawai’ians view Tūtū Pele as a symbol for “resilience, adaptability, and the power of the indigenous culture of the islands” (Wigington, 2019).

Figure 4: Coconut growing in lava rock at Pohoiki Beach. Taylor Webb.

**Eruptions of Mount Kīlauea**

Mount Kīlauea, the volcano affecting the Puna District, is the world’s most active volcano and the youngest volcano on the island of Hawai’i (National Parks Service, 2022). Figure 5 shows the lava flows from Kīlauea over the past several hundred years. The most recent devastating eruption occurred in May of 2018 in which the east rift opened several fissures in a residential subdivision, Leilani Estates, and released lava, sulfur dioxide gas and volcanic ash (McKenna, n.d.).

The eruption occurred after the summit of Puʻuʻōʻō collapsed marking the end of a 35-year eruption that first began in 1983 (National Park Service, 2021). The start of the 2018 eruption caused a 6.9 magnitude earthquake, and the lava flow lasted for two months adding approximately 875 acres of new land to island (National Park Service, 2021). The eruption destroyed between 600-700 homes in Puna along the Kalapana coastline (Hughes, 2018) which included a mix of owner, renter, and secondary properties (County of Hawai’i, 2020). In total, the lava flow covered over 13.7 square miles of land including 30 miles of roads and displaced about 3,000 residents (National Park Service, 2021). The community continues to recover from the 2018 Kīlauea eruption’s devastating effects.
Puna Demographics

The total population of the Puna District is about 46,000 residents (Statistical Atlas, n.d.) and has a population growth rate of 0.5% per annum (County of Hawai‘i Office of Housing and Community Development, 2020). Puna is made up of approximately 55,000 lots in over 20 primary subdivisions (Townscape, Inc., Puna Regional Circulation Plan, 2005) each with their own growth rate and demographic profiles.

The Hawai‘ian Paradise Park subdivision has seen an increase in population of 31% over the past decade, as noted in Table 2, making it the fastest growing subdivision in the district (U.S. Census Bureau, 2021a). While it is the fastest growing subdivision, it also has a fairly low percentage of Native Hawai‘ian and Pacific Islanders (U.S. Census Bureau, 2021a) which may be an indicator of mainland transplants to the area. A 2019 in-migration summary of Hawai‘i County indicated that approximately 25% of total movers to the area from within the US came from another state (U.S. Census Bureau, 2019). Another possible reason for such a dramatic increase in population in Hawaiian Paradise Park is that it is located in lava zone 3 which means...
buyers are able to acquire homeowner’s insurance and mortgage financing unlike properties located in lava zones 1 and 2 (Selman, 2021).

Overall, the Puna District has seen a 10% population increase since 2010, compared to the capital of Hilo which has only seen a 2% increase in population as noted in Table 1 (U.S. Census Bureau, 2021b). Over the past decade, the increase in Puna’s population can be attributed in part to lower home prices in the district as well as its rural nature that allows for more informal housing and transient living styles. This can be seen through the high levels of poverty in the district. While different areas of Puna have varying poverty rates, the highest poverty rate in the area is 26.1% (Table 3) with the average for the district totaling 19.63% which is higher than that of Hilo at 17% shown in Table 1(U.S. Census Bureau, 2021b). Further demographic information from different areas within Puna can be seen in Tables 2-5 on the next page.

### TABLE 1: COMPARATIVE DEMOGRAPHICS

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Hilo</th>
<th>Puna</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2010)</td>
<td>43,263</td>
<td>37,124</td>
</tr>
<tr>
<td>Population (2020)</td>
<td>44,186</td>
<td>40,929</td>
</tr>
<tr>
<td>% Change in Population</td>
<td>2%</td>
<td>10%</td>
</tr>
<tr>
<td>% Native Hawai‘ian</td>
<td>10%</td>
<td>19.95%</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$65,727</td>
<td>$54,554</td>
</tr>
<tr>
<td>% Poverty</td>
<td>17%</td>
<td>19.63%</td>
</tr>
<tr>
<td>Median Home Value</td>
<td>$341,500</td>
<td>$265,875</td>
</tr>
<tr>
<td>Median Rent</td>
<td>$1,098</td>
<td>$1,211</td>
</tr>
</tbody>
</table>

Table 1: Comparative demographics of Hilo and Puna. Demographic information from all census defined area within Puna were combined to create data for the whole district. U.S. Census Bureau.
### TABLE 2: DEMOGRAPHIC DATA FOR ZIP CODE 96749 (LAVA ZONE 3)

<table>
<thead>
<tr>
<th>Hawaii’ian Paradise Park*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2010)</td>
<td>11,404</td>
</tr>
<tr>
<td>Population (2020)</td>
<td>14,957</td>
</tr>
<tr>
<td>% Change in Population</td>
<td>31%</td>
</tr>
<tr>
<td>% Native Hawai’ian</td>
<td>10.3%</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$76,122</td>
</tr>
<tr>
<td>% Poverty</td>
<td>9%</td>
</tr>
<tr>
<td>Median Home Value</td>
<td>$307,400</td>
</tr>
<tr>
<td>Median Rent</td>
<td>$1,115</td>
</tr>
</tbody>
</table>

Table 2: Demographic Data for zip code 96749. U.S. Census Bureau.

### TABLE 3: DEMOGRAPHIC DATA FOR ZIP CODE 96771 (LAVA ZONE 3)

<table>
<thead>
<tr>
<th>Glenwood, Fern Forest, Eden Roc, Volcano*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2010)</td>
<td>8,339</td>
</tr>
<tr>
<td>Population (2020)</td>
<td>7,736</td>
</tr>
<tr>
<td>% Change in Population</td>
<td>-7%</td>
</tr>
<tr>
<td>% Native Hawai’ian</td>
<td>14.4%</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$223,000</td>
</tr>
<tr>
<td>% Poverty</td>
<td>26.1%</td>
</tr>
<tr>
<td>Median Home Value</td>
<td>$223,000</td>
</tr>
<tr>
<td>Median Rent</td>
<td>$1,042</td>
</tr>
</tbody>
</table>

Table 3: Demographic Data for zip code 96771. Note that given the high poverty percentage, there may be outliers with very high household incomes that is causing the median household income for this area to be high compared to surrounding areas. U.S. Census Bureau.

### TABLE 4: DEMOGRAPHIC DATA FOR ZIP CODE 96760 (LAVA ZONE 3)

<table>
<thead>
<tr>
<th>Kurtistown, Kea’au, Orchidland Estates, ‘Āinaloa, Hawai’ian Acres, Mountain View*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2010)</td>
<td>3,001</td>
</tr>
<tr>
<td>Population (2020)</td>
<td>3,038</td>
</tr>
<tr>
<td>% Change in Population</td>
<td>1%</td>
</tr>
<tr>
<td>% Native Hawai’ian</td>
<td>9.8%</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$62,196</td>
</tr>
<tr>
<td>% Poverty</td>
<td>18.4%</td>
</tr>
<tr>
<td>Median Home Value</td>
<td>$333,300</td>
</tr>
<tr>
<td>Median Rent</td>
<td>$1,538</td>
</tr>
</tbody>
</table>

Table 4: Demographic Data for zip code 96760. U.S. Census Bureau.

### TABLE 5: DEMOGRAPHIC DATA FOR ZIP CODE 96778 (LAVA ZONES 1 & 2)

<table>
<thead>
<tr>
<th>Pahoā, Hawai’ian Beaches, Leilani Estates, Nānāwale Estates, Pohoiki, Kapoho*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2010)</td>
<td>14,380</td>
</tr>
<tr>
<td>Population (2020)</td>
<td>15,198</td>
</tr>
<tr>
<td>% Change in Population</td>
<td>6%</td>
</tr>
<tr>
<td>% Native Hawai’ian</td>
<td>16.1%</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$38,244</td>
</tr>
<tr>
<td>% Poverty</td>
<td>24.9%</td>
</tr>
<tr>
<td>Median Home Value</td>
<td>$199,800</td>
</tr>
<tr>
<td>Median Rent</td>
<td>$1,148</td>
</tr>
</tbody>
</table>

Table 5: Demographic Data for zip code 96778. U.S. Census Bureau.

*Zip codes may vary in subdivisions throughout Puna. Examples of subdivisions in each zip code are shown based on a zip code map from United States Zip Codes (United States Zip Codes, n.d.).
RESEARCH

Research Questions
The complexities of the Puna District described above have created many pressures on the affordability and availability of housing in the community. To better understand the ways in which these pressures have impacted the housing experiences of the residents and to determine the best ways to meet the residents’ housing needs, I posed the following questions to guide my research:

In what ways have the current land use regulations in Puna, Hawaii impacted accessibility to a variety of housing forms particularly for low- and lower-middle income residents?

What are the housing needs of the residents within the Puna District, and are these needs being met?

Do the current housing typologies and land use zoning classifications within the Puna District align with the stated community goals about housing?

Do the existing housing typologies within the Puna District align with the allowable housing development based on the current land use regulations?

What forms of housing are desirable to the residents that are either not currently allowable or are not present in the district?
Research Methods

For my research design, I used a mixed method approach to study both the physical and social qualities of the Puna District, the housing typologies, and its residents. Mixed methods have been implemented in numerous studies involving neighborhoods and have proven to be fruitful in measuring structural characteristics as well as social processes to understand the full construct of the neighborhood (Bass and Lambert 2004; Cunningham 1999; Kingston et al. 1999; Korbin et al. 1998; Perkins and Taylor 1996; Seidman et al. 1998).

I used four different methods in my research: policy analysis, a windshield survey, an online survey, and resident interviews. The research methods were broken into two phases. The first phase consisted of a policy analysis in which I evaluated the land use regulations in Puna to better understand the stated goals related to housing development as well as subdivision and town planning in the district.

The second phase took place in Hawai‘i over two weeks and was comprised of community assessment methods including a windshield survey, an online survey, and resident interviews. Windshield surveys are systematic observations made from a moving vehicle and are particularly useful when the area you want to observe is large, and the aspects you are interested in can be seen from the road (Center for Community Health and Development, n.d., Ch. 3 Section 21). While in the field, I conducted a windshield survey in Puna to examine the current housing typologies that exist within the district.

Figure 6: Photo of Taylor Webb and Yumi-Shika Shridhar tabling at the Activate Puna Block Party to recruit survey participants. Taylor Webb.

The next community assessment method I used in my field research was an online survey. The online survey was intended to reach a wider population in Puna to create a fuller picture of the housing needs and experiences in Puna. Flyers with the QR code to the online survey were created and distributed throughout the region as well as through email by key stakeholders and community members. I also had a booth at the Activate Puna Block Party (Figure 6) to talk with residents and distribute flyers to recruit survey participants. Survey responses were gathered to identify key themes to continue to paint a broader picture of housing needs and experiences in the district.

The final community assessment method I conducted was resident interviews. Interviews can be helpful when you need information about assumptions and perceptions in a community as
well as for in-depth information on a particular topic (Center for Community Health and Development, n.d., Ch. 3 Section 12). I conducted face-to-face, loosely structured interviews with 15 residents and family members within a cross section of the Puna district. Initially, interviewees were recruited with help from key stakeholders. Then, snowball sampling, or recommendations, from interviewees and survey participants were used to identify additional interviewees. Interviews were conducted at a place of the participants’ choosing and locations ranged from participants welcoming me into their homes or to a favorite local café, to conducting interviews while on adventures to lava fields (Figure 7) and hidden tide pools (Figure 8). Although it was a small sample size, the interviews were in-depth and created a thorough understanding of the residents’ housing needs and experience. Key themes were identified to fully assess and evaluate the needs of the community.

Figure 7 (above) and Figure 8 (below): Photo of lava field created from the 2018 Kilauea eruption; Photo of hidden tide pools along Puna coastline. Taylor Webb.
## Overview of Research Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Data Collection</th>
<th>Benefits</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Analysis</td>
<td>Planning documents and regulations were examined to identify stated housing goals at the district, County, and State levels.</td>
<td>All documents and regulations are public domain which made them easily accessible.</td>
<td>Most planning documents for the Puna District were outdated.</td>
</tr>
<tr>
<td>Windshield Survey</td>
<td>Drove around the Puna District and made observations of existing housing typologies from the car.</td>
<td>Able to observe large areas in a shortened time frame which was necessary given the immense size of the Puna District.</td>
<td>Dense foliage and far setbacks sometimes made it difficult to observe homes.</td>
</tr>
<tr>
<td>Online Survey</td>
<td>Survey was created through Qualtrics and recruitment for survey responses was conducted via flyers containing a QR code to the survey which were distributed at various locations throughout Puna.</td>
<td>Able to recruit many people in various locations as well as able to collect data on a larger set of residents.</td>
<td>Not all Puna residents have access to reliable internet service and not all residents prefer surveys as a way to communicate needs.</td>
</tr>
<tr>
<td>Interviews</td>
<td>Interviews were conducted with residents at a location of their choosing within Puna. Community stakeholders and survey respondents assisted with recruitment for the interview participants.</td>
<td>Able to create a deeper understanding of housing needs and experiences through semi-structured interviews that allowed for storytelling.</td>
<td>Long duration of interviews and limited incentives restricted the number of interviews that could be conducted.</td>
</tr>
</tbody>
</table>

Table 6: Table showing an overview of all research methods including the process of data collections as well as the benefits and limitations of the research method.
Phase 1: Understanding Existing Policies & Regulations Affecting Puna

Policy Analysis

The District of Puna in Hawai‘i has unique challenges when identifying the proper land use policies and regulations that should govern the district. Policymakers must consider several factors when making land use decisions in relation to housing to ensure the housing needs of the jurisdiction are being met. Using the policy analysis method, I evaluated the current land use regulations in Puna to identify areas for improvement and make recommendations for policy changes.

There are countless criteria that can be used to evaluate housing policies. Rather than comparing existing policies to a set of predetermined criteria, I instead identified stated housing goals for the Puna District as outlined in different documents and compared the goals with currently adopted policies. The reason behind this rationale is because a primary focus of my research is to determine the extent to which the already established housing goals of the community are being met, or not met. Communities spend many months gathering community input to create planning documents that encompass shared visions. Yet, the regulations in place do not always align with the goals stated in those documents. By evaluating the current land use policies based on the stated housing goals, gaps can be identified, and policies can be amended to ensure the housing goals are met.

For the policy analysis, I evaluated several documents and regulations at the district, county, and state levels. The Puna Community Development Plan developed in 2008 was the most pertinent of all the regulatory documents for my research as it clearly stated the vision for future growth in the Puna District. However, other regulatory documents I analyzed included the following: Puna Regional Circulation Plan (2005), County of Hawai‘i Consolidated Plan (2020-2024) and Action of the Consolidated Plan (2020-2024), Hawai‘i County Code Chapters 11 (Housing) and Chapter 25 (Zoning), and the Hawai‘i Housing Planning Study (2019).

It is also important to note that many, if not all, of the subdivisions in Puna are privately managed by homeowner’s associations (HOA’s) each with their own set of codes, covenants, and restrictions (CC&R’s). While I will not go into depth about the HOA’s in this report, I would like to acknowledge that creating plans for the Puna District is challenging when there are different HOA’s for each subdivision with their own visions and CC&R’s for their community; some of which are more restrictive and do not align with the broader goals for the district. In addition, no public dollars are used to make infrastructure improvements within these privately managed subdivisions; therefore, the HOA’s are responsible for all infrastructure improvements such as road and right-of-way developments. The siloed nature of the subdivisions within Puna create an additional layer of complexity when examining regulations and plans that govern the area.
According to the County of Hawai‘i Planning Department webpage, “Community Development Plans (CDPs) are intended to translate broad General Plan Goals, Policies, and Standards into implementation actions as they apply to specific geographical regions around the Island. CDPs are also intended to serve as a forum for community input into land-use, delivery of government services and any other matters relating to the planning area” (County of Hawai‘i Planning Department, n.d.). The most recent Community Development Plan for Puna District was created over a decade ago in 2008. While there is no set length of time for which community development plans must be updated, plans should be updated regularly to reflect the changing needs of the community.

Many things have changed in Puna over the fourteen years since the plan was created including several summit eruptions of Kīlauea and the infamous summit collapse and eruption in 2018 which destroyed over 700 homes and devastated residential areas in the Puna District (U.S. Department of the Interior, 2021). While this has drastically altered the landscape of Puna, volcanic eruptions are common to the area and have been occurring since the late 1700’s. The Puna Community Development Plan discusses in detail the hazards of the area and proposes ways to plan for development with safety as a primary priority. Other priorities include moving away from sprawling forms of development, preserving natural and cultural resources, and creating a sustainable quality of life for Puna residents (Puna Community Development Plan Steering Committee, 2008).

**Housing Goals at the District Level**

![Image of Geological Risk Zones Relative to Populated Areas and Subdivisions](Figure_9_Geological_Risk_Zones_Relative_to_Populated_Areas_and_Subdivisions_Puna_Community_Development_Plan_2008)
As shown in Figure 9 above, the three most populated subdivisions are Nānāwale Estates, Leilani Estates, and Hawai’ian Shores Estates. These three subdivisions are also in the two highest risk geological hazard zones: zones one and two. The map in Figure 10 shown below, shows the most recent lava flow in 2018 which began in Leilani Estates and flowed outward toward the coast.

The Puna Community Development Plan (CDP) proposed that new development be focused on village and town centers in lower risk areas such as Volcano Village, Pahoā Town, Kea’au Town, and Mountain View-to-Kurtistown (Puna Community Development Plan Steering Committee, pg. 5-5, 2008). The town centers will include residential lots that are smaller with higher density, commercial and light industrial uses, as well as public facilities and services such as schools and parks (Puna Community Development Plan Steering Committee, pg. 5-3, 2008). Presently, Pahoā and Kea’au are the only existing town centers in Puna, and while they do have some essential services, they are not all-encompassing.

It is stated many times in the Puna CDP that the goal for future development is to concentrate residential homes near village and town centers. By moving away from sprawling rural development and toward village and town center-based development, Puna residents will be concentrated in areas of lower geological risk, will live closer to essential services, and will be able to preserve land for natural and cultural resources.

Figure 10: Map showing the lava flow field from 1955 compared to 2018. USGS.

Village and town centers usually serve smaller or more rural communities. The town of Pahoā is already following this model in regards to commercial development. The town has more
densely populated areas: Old Pahoa which has local shops and restaurants along a main thoroughfare, and “new” Pahoa, or Puna Kai, which has a drug store as well as other shops and restaurants. However, Pahoa is still largely zoned for agricultural uses. As seen in Figure 11 below, all the areas in green are zoned for agricultural uses. Hawai‘i County Code allows for one single-family dwelling on lots zoned for agricultural uses, and an ‘Ohana dwelling may be permitted in any agricultural area zoned with an “a” qualifier (County of Hawai‘i, Section 25-5-77, 2016). The agricultural zones in Pahoa allow for large lots ranging from 1 to 5 acres. Lots of this size are not aligned with the stated goals of increasing density near town centers to reduce sprawl.

The Puna Regional Circulation Plan (RCP) developed in 2005, stated similar development goals as the Puna CDP regarding the creation of town centers. A community mapping exercise that was conducted to inform the Puna RCP validated that many residents commute regularly to Hilo for essential services (pg. 2-8). It asserted that creating village centers could create sustainable patterns that reduce commutes and offer many economic, ecological, social and cultural benefits (Townscape, Inc., pg. 3-2, 2005). The Puna RCP states that residents will continue to commute long distance to Hilo without the development of village centers, and therefore major improvements in infrastructure as well as the addition of mixed used developments are necessary for the district (Townscape, Inc., pg. 3-2 and 3-3, 2005).

While both the Puna CDP and the Puna RCP are aligned regarding the creation of village centers with mixed use development and denser residential housing patterns, only minimal improvements have been made since these plans were created. The creation of the Puna Kai shopping center in Pahoa as well as additional nearby stores (Figure 12) were a welcomed
addition to the district in 2020. Puna Kai offers over 30 shops, restaurants and businesses to the community as well as hosts community events such as pop-up craft markets, carnivals, and supply drives (Puna Kai Shopping Center, 2018). The 2005 County of Hawai‘i General Plan stated that land in Kea‘au was going to be rezoned to create a new shopping center with over 200,000 square feet of retail floor area with an expected completion date of 2008. However, it is unclear whether that project moved forward. The primary shopping center in Kea‘au is the Kea‘au Shopping Center which was developed in 1980 (Hawaii Tribune-Herald, n.d.). Other infrastructure improvements in Puna include the addition of the Kea‘au-Paho‘a roundabout in 2016 to improve safety as well as reduce speeds and traffic congestion (Department of Transportation, 2016). While these are all great infrastructure additions to the Puna district, they do not fully align with the goals stated in the plans regarding village centers because there have not yet been residential improvements and additions in these areas.

![Aerial photo of Puna Kai Shopping Center](image)

**Figure 12:** Aerial photo of Puna Kai Shopping Center. Big Island News.

**Housing Goals at the County and State Levels**

While the planning documents that are specific to the Puna District will directly impact the area the most, the district is, of course, subject to county-wide and state-wide plans and regulations. Housing is a high priority at both the county and state level. The Hawai‘i County Consolidated Plan (2020) stated that estimated housing units needed in the county from 2020 to 2025 is approximately 13,000 units (County of Hawai‘i Office of Housing and Community Development, pg. 21, 2020). In addition to creating more housing units, the consolidated plan states that creating more housing for households earning less than 80% of median income among its highest priorities (County of Hawai‘i Office of Housing and Community Development, pg. 5, 2020). To help meet these goals and overcome barriers to affordable housing, the County asserted that they would revise Hawai‘i County Code, Chapter 11 (Housing) to increase the amount of affordable for-sale housing units (County of Hawai‘i Office of Housing and Community Development, pg. 129, 2020).

Chapter 11 of the Hawai‘i County Code was amended in 2005 to include affordable housing
requirements, also referred to as inclusionary zoning. The code requires 20% of all units constructed in a project to be affordable for any projects with five or more units, and the affordable units must remain affordable for at least 15 years for for-sale units and 20 years for rental units (County of Hawai’i, Section 11-4, 2016). Compared to other municipalities with inclusionary zoning, Hawai’i’s regulations are quite robust. For instance, Portland, Oregon’s inclusionary zoning ordinance only requires 10-15% of units to be affordable for developments with 20 or more units (City of Portland, n.d.). Similarly, Montgomery County, Maryland requires any subdivision or high rise building with 20 or more units to set aside 12.5-15% for moderate incomes (Montgomery County, n.d.). While mandated affordable housing is great and despite the relatively low requirements in Hawai’i, this code has yet to be applied in Puna because there have been no projects in the district that meet the requirements: developments with five or more housing units.

In the 2022 Action Plan of the Consolidated Plan (2020-2024) they identified that impediments to affordable housing production included lack of major off-site infrastructure, high cost of construction, and government regulations among other things and that the County lacks funding to adequately address these issues (County of Hawai’i, pg. 31, 2022). It states that continued federal and state funding and private and for-profit relationships are necessary to ensure affordable housing will be developed (County of Hawai’i, pg. 32, 2022).

In 2019, the state of Hawai’i conducted the Hawai’i Housing Planning Study with the intent of providing housing planners with data on housing to support planning activity (SMS Research & Marketing Services, Inc., 2019). The study states that Hawai’i’s heavily regulated housing market, government regulations, and review processes have been identified as major impediments to housing production (SMS Research & Marketing Services, Inc., 2019). When constructing housing is difficult and time intensive, housing is underproduced and overpriced.

The permitting process for homes in Hawai’i County continues to be an issue for both the residents and the County staff. In 2021, the County of Hawai’i spent $2.5 million on a new online permitting software called EPIC (Electronic Processing and Information Center) that helps track and manage plan applications and requests for both building and engineering permits (County of Hawai’i Department of Public Works, n.d.). Electronic permitting systems have been seen as a way to speed up the building permit process for all people involved, and the U.S. Department of Housing and Urban Development has encouraged jurisdictions across the US to change to electronic systems (National Institute of Building Sciences, 2002).

While the EPIC system is intended to make the permitting process easier, there have been some hiccups along the way; software bugs and staff shortages are delaying permitting times (Lauer, 2022). As of June 2022, the average time from submittal to issuance for residential permits was 162 days or over 5 months (County of Hawai’i Department of Public Works, n.d.). Residents expressed concerns about the delayed permitting process at a Cost of Government Commission meeting in April 2022, and Commission Chairman Michael Konowicz sympathized with concerns because his own permit application had been stuck in the system for more than 245 days (Lauer, 2022). While the County is working to fix the delays, it is increasingly more difficult to build the housing needed with such long wait times.
Phase 2: Community Assessment Methods in Puna

Windshield Survey

As an outsider coming into the Puna District for the first time, it was important to get an understanding of the district the best I could. This was made possible through the windshield survey method. Windshield surveys are particularly useful when the area intended to be observed is large and most aspects of interest can be seen from the road (Center for Community Health and Development, Ch. 3 Section 21, n.d). The windshield survey was conducted throughout the entire duration of the field work as seen in Figure 13. Observations were made of existing housing typologies, condition of land parcels, infrastructure, and distance to essential services from different subdivisions.

Despite Puna's immense size, I was able to see most of the district by driving through the primary quadrants of the district. This includes the following areas and subdivisions in Puna: Pahoa, Kea'au, Orchidland Estates, Hawaiian Paradise Park, Hawaiian Beaches, Hawaiian Shores, Nānāwale Estates, Leilani Estates, Hawaiian Acres, Pohoiki, and Kapoho. The areas surveyed were primarily along Hwy 130 (Kea'au-Pahoa Rd), Hwy 132 (Pahoa Village Rd), and Hwy 137 (Government Beach Rd). Kea'au-Pahoa Rd is the only way to get to Puna from Hilo or anywhere north, and because of the 2018 Kilauea eruption, other roads have been inundated and additional access to some areas in south Puna was lost.

A primary observation from the windshield survey was that the landscape became more rural in Southern Puna. The farther south you go on Hwy 130, the more agricultural and forest reserve land there is as well as visible areas of fresh lava rock from the 2018 Kilauea eruption. Subdivisions closest to the highway typically had smaller lots around 1-3 acres. For instance, lot sizes in Hawaiian Paradise Park in the North Puna are typically 1 acre (Hawaiian Paradise Park Owners Association Master Plan Revision Committee, 2005).

The uneven development pattern across the district meant that some homes were more isolated than others. As you drive further away from the main road, subdivisions gave way to rural agricultural land. Some roads were not paved, and the homes became more spread out or hard to see due to increased foliage and large setbacks. Additionally, I observed that almost all homes were traditional single-family detached homes, and there were no observed sidewalks.

Leilani Estates is where Fissure 8 opened up during the 2018 Kilauea eruption. The subdivision is one of the most densely populated in Puna and the subdivision had a suburban
neighborhood feel to it. Generally, most homes and lots in Leilani Estates were well maintained. Next to Leilani Estates is Nānāwale Estates. This subdivision seemed to have a wider range of maintained versus unmaintained homes and lots. Some homes appeared to be very old and rundown, and a few lots had temporary or informal living structures such as tarped structures or tents.

In north Puna, some subdivisions have smaller lots sizes making the homes closer together. Hawai‘ian Paradise Park had the most suburban neighborhood feel. I saw many neighbors out for walks, kids playing in the streets, and neighbors chatting to one another. The homes were set closer to the front lot line of the property and were in well maintained condition. Orchidland Estates had larger lots sizes with sizes ranging in size up to 3 acres (Orchidland Community Association, n.d.), but still maintained the suburban neighborhood feel. Hawai‘ian Beaches and Hawai‘ian Shores also had a similar feel. These subdivisions are the only two that are not on catchment systems for water. Even still, I saw some informal housing structures such as tents and tarped structures in the Hawai‘ian Beaches subdivision.

Overall, given Puna’s immense geographical area, using the windshield survey methodology was the most appropriate. Through this method, I was able to survey the existing development conditions of the district. From the areas I observed, it was apparent that Puna is comprised almost solely of traditional single-family homes on large lots, but that there were also a few lots throughout the district that had informal housing structures such as tents, tarped structures, and other dwellings made of semi-permanent materials. Due to the rural nature of the area, it is impossible to know for sure how many informal structures there are in the district; however, I expect the number to be moderately high especially in comparison to other areas around the island. While the use of aerial photos could have supplemented the windshield survey, I was satisfied with the level of observation I made in Puna. The findings confirmed that the district has limited housing typologies as well as housing typologies that are informal, or likely unpermitted.

**Online Survey**

The online survey was intended to reach a broader audience and gather more information from Puna residents in addition to the interviews. Recruitment for survey participants was conducted by distributing flyers throughout the district with a QR code to the online survey as seen in Figure 14. However, it became apparent that online surveys are the preferred method of data collection for residents. Most Puna residents prefer to talk either face-to-face or on the phone. Also, not all residents have
reliable access to internet. Overall, 33 people responded to the online survey.

Surprisingly, over half of the survey respondents indicated that they have lived in Puna for over 20 years as seen in Figure 15. While 1-5 years and 5-10 years were also chosen by quite a few participants, I was happy to discover most respondents have had a longstanding connection to the district for two or more decades. Despite the small sample size, this indicates to me that these residents have a deep understanding of the district and have seen it grow and change over the years.

When asked which area of Puna they resided in, most respondents indicated that they lived in Hawai’ian Paradise Park and Orchidland Estates as seen in Figure 16. Both of these subdivisions are located in the Northern most part of the Puna district closer to Hilo and right off of Hwy 130 allowing for easy access to and from the district. Hawai’ian Paradise Park is also one of the most densely populated subdivisions in Puna, so it is not surprising that many respondents are from that area.

The last, and most compelling, graphic I will share from the survey is a question regarding housing insecurity. When asked if they had ever experienced housing insecurity while living in or around the Puna District, a staggering 62.5% of people responded yes as shown in Figure 17. While there are many different reasons that may lead to housing insecurity, this high percentage is an indication that there are severe housing issues in the areas.
At the end of the survey, there was a text box where people could write in any other thoughts related to housing in Puna that they wanted to share. While there were a range of responses, many people indicated that there are severe issues related to housing affordability, allowable housing types, and pressure from mainland buyers.

One respondent stated,

“There is no realistic “affordable” housing in Hawai‘i County. In Puna, people are going to live in Lava Zone 1 and 2 with or without conforming structures; Codes in these zones should be amended to realistically meet the needs of Puna residents. Modest, modular, movable structures have been used by our host culture for generations but are discouraged by building codes that are modeled after obsolete mainland building codes. The situation is more critical in today’s real estate market with local families being locked out by inflated real estate prices that cater to wealthy transplants.”

Others mentioned that housing issues have been exacerbated since the 2018 Kīlauea eruption and the COVID-19 pandemic. The eruption destroyed over 700 homes which caused, “the market [to be] flooded with great housing needs upon the already existing issues with affordable housing” one respondent stated. Another respondent said that, “during the 2018 eruption and post eruption housing was very difficult to find”. The pandemic also caused an increase in remote work which has allowed people to work from anywhere in the world. One respondent stated that “housing costs have skyrocketed during the pandemic. Remote workers and digital nomads have come from the mainland [and are] willing to pay mainland rental rates. Local rent has doubled or tripled in the last year alone. It has become absolutely impossible to find affordable housing in lower Puna”.

The survey provided great insight into the primary housing-related issues facing Puna. Although the sample size was small, the respondents seemed to be well distributed across the district and shared similar concerns about housing in the area. All survey responses can be found in Appendix: Section 1. Of the 33 survey respondents, 16 indicated that they would be interested in participating in an interview. While I was not able to meet with all 16 respondents due to time constraints, I was able to schedule interviews with a few.

**Interviews**

While in Puna, I conducted fifteen interviews with residents, some of which were accompanied by family members, to create a deeper understanding of housing experiences, needs, and preferences of the community. Interviewees were selected to cover a broad range of locations within Puna, ages, gender identities, family compositions and living styles, and educational and professional backgrounds. All interviews were conducted in-person at a location of the interviewee’s choosing with the exception of one interview which took over Zoom.

The interviews were loosely-structures with a set of questions used as a guide for the
conversation while still allowing the conversations to happen naturally (see Appendix: Section 3 for interview questions). The interviews were recorded using a transcription service called Otter.ai which transcribed the conversation. The interviewees gave me permission to use their first names in association with quotes from the interviews. The key themes are outlined in Table 7 below.

**Table 7: Key Themes from Interviews**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>What brought you to Puna and in what ways has living in Puna impacted your life?</td>
<td>Puna has greatly impacted people's lives and helped them achieve their dreams</td>
</tr>
<tr>
<td>In what ways has the 2018 Kīlauea eruption impacted you and your housing?</td>
<td>Nothing is permanent, Puna fosters resilience and residents respect Pele</td>
</tr>
<tr>
<td>Is there anything you wish you could change about your current living situation?</td>
<td>Residents need services, yesterday</td>
</tr>
<tr>
<td>What is your vision for Puna in the future in general and in relation to housing?</td>
<td>Culture and Affordability must be maintained. More housing options and flexible building codes</td>
</tr>
</tbody>
</table>

*Table 7: Key themes derived from the resident interviews and the interview questions that lead to the responses.*

**Puna Has Greatly Impacted People's Lives and Helped Them Achieve Their Dreams**

One of the primary themes I started to notice after a few interviews, was how passionate the interviewees were about Puna and how fortunate they felt to be able to call this place home. When asked about how living in Puna has impacted their lives, Chris and Holly stated, “if it was on a scale of one to 10 [it would be]15. [...] I would say it might be the biggest impact you might be able to experience”. Prior to moving to Puna, Chris and Holly lived in a small home with their parents on Oahu and were paying high rent costs. For them, moving to Puna allowed them to move into a bigger home with more space for their children and for them to work from home.

Another interviewee, Heather, stated, “I have less, and I am the happiest I’ve ever been, and I just want to give it to everybody else. So yeah, I’d say it significantly impacted me”. Prior to moving to Puna, Heather was living in Oregon and was severely impacted by seasonal depression. Moving to Puna allowed her and her family to live happier and fuller lives.

When describing the feeling that drew him and his wife to Puna, interviewee Jon said, “It [the feeling] is coming out of the ground. This is a place to be. [...] If we ended up here this would not be a bad thing”. There was no denying when talking to these residents

“I have less, and I am the happiest I’ve ever been, and I just want to give it to everybody else. So yeah, I’d say it significantly impacted me”.

- Heather
that Puna was not only their home, but a truly special place that should be cherished and protected.

**Nothing is Permanent, Puna Fosters Resilience and Residents Respect Pele**

While moving to a place that has high risk for lava inundation might not be everyone’s dream, for Amadeo the lava provided him an opportunity that he otherwise would not have had. He stated, “this is by far and away the nicest house that I’ve ever lived in, and it was only because of the disaster [2018 Kīlauea eruption] that we were able to get it so it’s a mixed blessing”. Housing affordability was seen as the most prominent factor that drew people to the Puna District. The ability to purchase a sizable home for a relatively affordable price is a big draw; even if that means that the home comes with a higher risk of lava inundation.

“When she [Tūtū Pele] allows us to stay the rest of our lives here, then we’re blessed. If she [Pele] wants it, it’s hers. But you know, she’s allowing me to live here, so I’m going to take care of it”.

- Kipu

When asked about what is like to live in Leilani Estates just a few blocks from where Fissure 8 opened during the 2018 Kīlauea eruption, Kipu, pictured in Figure 18, mentioned that she knows she lives on Pele’s land not her own. She stated, “If she [Tūtū Pele] allows us to stay the rest of our lives here, then we’re blessed. If she [Pele] wants it, it’s hers. But you know, she’s allowing me to live here, so I’m going to take care of it”. Kipu felt fortunate that her home was spared from the lava back in 2018, but has since developed some health issues related to the vog (volcanic fog) and ash particulates that were in the air. For many residents, including Kipu, it was important to be able to stay in their homes after the eruption rather than be displaced despite the potential risks.

![Figure 18: Kipu standing in front of her home in Leilani Estates. Taylor Webb.](image)
Carol, a friend of Kipu pictured in Figure 19, also lived just a few blocks from Fissure 8, and although her house was spared from the lava the subsequent earthquakes caused a large crack in the ground under her house. She stated that the experience made her realize, “we live in an impermanent world, and I think we have constructed a belief that nothing changes. And in fact, everything changes all the time. And sitting here watching my own land, and how it's come back from death has really shown me we live in I live in an impermanent world living on a crack in the earth has shown me every day is a gift. [...] The land and me are living together. And that's beautiful”.

![Figure 19: Carol and her dog in front of her home in Leilani Estates. Taylor Webb.](image)

In addition to respecting Pele, residents also have a deep respect for the protection of the land, or ‘Āina in Hawai‘ian, which is taught from generation to generation. When talking to another interviewee, Donna, whose home was destroyed in the 2018 Kīlauea eruption, she stated that, “we were taught growing up that the property didn't belong to us, right? We were being stewards of the property from the ancestors”. Her home that was destroyed had been a family home first bought by her own parents and was lived in by Donna and her family including her grandchildren until it was taken by the lava. Despite losing her home, Donna and her family still reside in the Puna District.

Many people who lost their homes in the 2018 Kīlauea eruption still live in the district. Amadeo expressed that is normal, and that, “Hawai‘ians had dealt with inundation in the past. You move out of the way when the lava is flowing. When it's done, you move back in, and you rebuild. [...] I'm going nowhere unless the lava chases me out. And if it does, I'll just come back and rebuild”. When people have such a deep connection to a place, there are few things that will drive them away. For many of the residents I interviewed, they expressed no desire to ever leave Puna.
Residents Need Services, Yesterday

Just because residents have a deep love and connection for Puna, does not mean that they think Puna is without flaws. Many, if not all, of the residents I spoke with expressed a need for more infrastructure and services in the district including roads, sidewalks, schools, hospitals, grocery stores, and shopping particularly for small businesses.

Increased traffic over the past few years due to rising population rates in the district was expressed as a concern for many interviewees. The 2018 eruption led to several closures which still have not been reopened. Kipu stated that, “it would be nice if they opened up the roads, so we have more than one access in and out of the subdivision (Leilani Estates)”. Kipu mentioned that safety was a primary concern regarding the roads and fears that in an emergency, such as another eruption, it would be difficult for everyone to get out of Leilani Estates with only one access point. Amadeo, whose home pictured in Figure 20 is completed surrounded by lava from the most recent eruption, urged that Hawai‘i County needs to, “recognize that we are the fastest growing district and currently have the biggest population, and we have the least services by far. That’s a civil rights violation. [...] They have to address the infrastructure deficiencies”.

The desire for increased access to services for all age groups in the district was a key theme throughout the interviews. As the populations have increased over the years, schools have also been more crowded. In an interview with a local schoolteacher, Drea, she expressed that she, “wants people to be in the community where it feels like they can do things, where they have access to stay. I want to make sure that our schools are equipped to accommodate the kids that are coming in without becoming giant”. Another resident, Dawn, mentioned that she wishes, “there could be more senior services out here, [and] there should be senior housing out here”.

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“I want people to be in the community where it feels like they can do things, where they have access to stay. I want to make sure that our schools are equipped to accommodate the kids that are coming in without becoming giant”.
- Drea

Figure 20: Amadeo’s home which used to be on a hill until it was surrounded by lava in the 2018 Kilauea eruption. Taylor Webb.
To better understand what changes the residents hope to see, I asked them what their vision for Puna was in the future. Kipu expressed that she wants to, “make it affordable for people”, and that, “hopefully this ‘Āina [land] here will still be able to maintain its culture and its values”. Affordability came up as a primary hope for the future, but Donna expressed concern stating, “my biggest gripe with the word “affordable” is who [is it] affordable [for]? Because affordable on Oahu is $500,000, [...] so we’re really affordable here”. It was made apparent that the residents wanted to maintain the same level of affordability that Puna has seen historically with moderately priced homes and rentals.

Culture and Affordability Must Be Maintained

Kalehua and Keali‘i shared similar fears about rising home prices stating, “how are we supposed to retain our educators and our doctors and all these important […] resources? How [are we] supposed to keep them in state if we don’t create opportunities for them to stay?” Ensuring Puna residents have an affordable place to live while maintaining the same culture and values of the district is important for the residents.

More Housing Options and Flexible Building Codes

In addition to affordability, many interviewees expressed concern about the lack of housing options available in Puna. Heather urged that, “Puna needs apartment complexes. We have essentially affordable housing, but it is standalone housing [and] is too expensive for people. So there has to be complexes that can be more affordable for people”. As mentioned above in the policy analysis, Puna is made up almost entirely of single-family detached homes and strict zoning regulations make it nearly impossible to build other housing types.

“I always envisioned my dream house to be [….] village style living. [….] I never wanted a big giant house. I just want small little dwellings where we [their family] all have a communal space”.  
- Kalehua & Keali‘i

Kalehua and Keali‘i mentioned that they, “always envisioned [their] dream house to be [….] village style living. [….] I never wanted a big giant house. I just want small little dwellings where we [their family] all have a communal space”. For them, being able to have multiple dwellings on their lot would allow them to live more comfortably as a multigenerational household in the future where their parents could have their own space and other family members could have a place to stay when needed. However, the current codes do not allow for this type of development.
ANALYSIS

Through my research, I have gained a greater understanding of the ways in which Puna has been shaped over the years, the relationship residents have with the ʻĀina, the housing needs of the community, as well as the resident’s and stakeholders’ visions for Puna in the future. Since the 2018 Kīlauea eruption, thousands of residents have been displaced and there is an estimated unmet housing need of $237 billion (County of Hawai‘i Office of Housing and Community Development, 2020). While ample funding has been allocated since the eruption for long-term recovery needs including housing, this funding is used only for emergency housing and services. Puna needs solutions that will help it thrive well into the future.

When looking at emerging themes from all four research methods (policy analysis, windshield survey, online survey, and resident interviews), it is clear to me that Puna is lacking (1) adequate housing options, (2) housing that is affordable for a range of income levels, (3) sustainable development patterns and services, and (4) safety and hazard planning.

Change is inevitable and has been happening in the Puna District whether planners want to admit it or not. However, the County has not been keeping up with Puna’s rapid change. County planning staff have the opportunity to shape future growth in sustainable, affordable, equitable and safer ways before the situation becomes even more complex and difficult to plan for and manage.

Insufficient Housing Options

While Puna is primarily rural, that does not mean that residents only want one primary home on large lots. However, through the policy analysis I discovered that this is the only allowable housing types in most of the district. Due to most zoning designations being classified as agricultural in Puna as well as strict HOA regulations, residents are only allowed to build one single-family home per parcel.

However, responses from the online and interviews indicated that residents would prefer to have multiple dwellings per lot to create village style living that can accommodate friends, extended family members, and renters. Hawai‘ians and other Pacific Islanders have a propensity for living with extended family and having large households (SMS Research & Marketing Services, Inc., 2019) which makes it ideal for allowing multiple dwellings or ‘Ohana dwellings.
Additionally, the policy analysis showed that minimal areas in the district were zoned to allow for denser residential development such as apartments; condominiums; or middle housing forms including townhomes, row homes, courtyard homes, and duplexes. The windshield survey confirmed that none of these housing forms exist within the district. However, residents in the survey and interviews expressed a desire for more rental homes and affordable homeownership opportunities which these forms of housing can supply.

**Housing Affordability**

Affordable housing in Puna is a complex issue. Historically, Puna has offered relatively affordable homes with the median residential home price in 2016 being $196,000 (Hawaiʻi Information Service, 2022). Despite the 2018 Kīlauea eruption, the median residential home price in Puna is $360,000 as of June 2022 (Hawaiʻi Information Service, 2022). That is a staggering 84% increase in about 7 years. Even still, people continue to move to the district further driving up prices in the area.

Online survey results and interviews revealed that affordability is a primary concern, particularly for local residents. While it is imperative that housing remains affordable for residents in Puna so they are not displaced, the displacement will continue to occur if affordable housing solutions are not created in other communities. Across the Big Island, other Hawai’ian Islands, and the rest of mainland US, home prices have skyrocketed. The increased prevalence of remote work and the digital nomad lifestyle has increased the number of mainlanders moving to the Hawai’ian Islands pushing residents out of their homes.

While in Puna, I was able to visit new affordable housing developments in the heart of Pāhoa. The Sacred Heart Shelter shown in Figure 21, comprised of 20 modular tiny homes, was constructed by HPM Building Supply in 2020 for Hope Services Hawai’i in Pāhoa to house displaced seniors (Hope Services Hawai’i, n.d.). Additionally, they are currently constructing 12 studio homes to offer permanent affordable housing and supportive services for seniors experiencing homelessness (Hawai’i Catholic Herald, 2022). While this type of development is a wonderful addition to the community, it is only serving a fraction of the community members experiencing housing insecurity.

![Sacred Hearts Community](image.png)
Residents made it clear that in addition to the subsidized affordable housing (for people experiencing homelessness and who make 60% of the area median income or below) there is also a need for non-subsidized affordable housing (for people making between 60-120% of the area median income, also called the workforce).

**Unsustainable Development Patterns & Lack of Services**

Puna seems to be caught in stalemate between the desire to stay rural and the need to provide adequate services and accommodations for residents in the district. When the 55,000 subdivision lots were approved by Hawai‘i County in Puna in the 1950’s, they never intended for the lots to be built out to the extent that they are today, and the lack of services in the area are a direct reflection of that. Consultants to the Land Use Commission wrote in 1963 that “when the provision and maintenance of public facilities and services are requested and demanded by property owners in these subdivisions...both the solvency of the investment and the government are threatened” (Cooper and Daws, pg. 274, 1990).

There seems to be hesitation from Hawai‘i County to increase services and housing in an area with high risk for lava inundation. However, the majority of Puna, and all of Upper or North Puna is in lava zone 3 which is the same lava zone as Hilo as shown by the pink highlighted areas in Figure 22. So why have there not been efforts to create more sustainable development patterns in Puna?

The policy analysis revealed that the Puna Community Development Plan claimed the need for town and village center development comprised of denser commercial and residential development within close proximity to essential services more than a decade ago. However, through the windshield survey I observed minimal town...
center development. Despite the recent development of the Puna Kai Shopping Center in Pāhoa, there have been minimal efforts to densify housing nearby.

In addition, the online survey and interviews made it clear that residents are still not satisfied with the level of services in the area and must commute to Hilo where services are more widely accessible. Commuting causes traffic and increases greenhouse gas emissions which are not sustainable for the district. Many interview participants discussed traffic as a primary concern including Drea who stated that, “as the population grew in Puna [there were] more cars on the road”. Even with the new addition of the Mālama Market (Figure 23) in the Puna Kai Shopping Center, interviewee Amadeo stated that prices in the store are, “typically double of what they are in a store like Target [in Hilo]”. Basic principles of supply and demand can explain why Mālama Market, one of the only full service grocery stores in the district, is able to charge significantly more for their products.

![Figure 23: Mālama Market in Puna Kai Shopping Center in Pāhoa. Taylor Webb.](image)

**Safety & Hazard Planning**

Of course, the discussion of planning for safety and hazard mitigation from lava inundation cannot be overlooked. In an area that experienced frequent lava eruptions over the past several hundred years, future development must address the possibility of this risk. The policy analysis showed that many planning documents have taken this into consideration by planning future growth in Puna to primarily occur in areas outside of lava zones 1 and 2. However, the windshield survey and feedback from residents all pointed to the fact that people are still moving into subdivisions in these high-risk lava zones. Additionally, residents who have lived in the zones prior to the most recent eruption but were not directly impacted by the lava flow have no interest in leaving the area.

This poses an interesting dilemma to County planners and recovery staff. The County of Hawai‘i has created a Housing Buyout Program to assist those whose homes were destroyed or isolated by the lava which is primarily within the Leilani Estate subdivision when Fissure 8 opened. The County intends to remain ownership of the land and keep it as open space to
ensure others do not move into the area. While it is great that residents are getting recovery assistance, not all residents affected by the eruption are participating in this program which is creating a checkerboard pattern of residential and non-residential land. This will make it extremely difficult to plan for the area in the future as the HOA balances maintaining the residential neighborhood of the Leilani Estates subdivision with County-owned land intermixed throughout.

Additionally, the district is still lacking adequate infrastructure that was inundated by the lava. Through the windshield survey I was able to see just how many roads were covered in lava that are still closed. In Leilani Estates, there is only one access point in and out of the subdivision which poses a great threat if there was to be another emergency that required evacuation of the area. In an interview with Smiley who owns a property off Highway 132 near Four Corners that was completely inundated with lava, she spoke of neighbors nearby who still do not have access to their home which was isolated during the 2018 eruption. To access the home, the resident must carry their bike across a mile or more of lava and then bike an additional mile to reach their home. She is part of local efforts to reopen highway 132 and continues to advocate for other roads in the district to be reopened.
What is Already Being Done to Address Needs in Puna and Hawai‘i County?

**CDBG-DR Voluntary Housing Buyout Program**

As discussed briefly above, the County with funding from FEMA has created the Housing Buyout Program in response to the 2018 Kīlauea eruption. According to the Kīlauea Eruption Recovery website, “the Community Development Block Grant Disaster Recovery (CDBG-DR) Voluntary Housing Buyout Program (VHBP) is designed to assist those impacted by the 2018 eruption using federal HUD funds” (Kīlauea Eruption Recovery, n.d., a). Through the program, residents whose property was impacted by the 2018 Kīlauea eruption, particularly low- to moderate-income residents, can apply for the buyout program and receive federal funds for their property. In return, the County retains ownership of the properties to prevent impact from future eruptions. The buyout program based offers on the 2017 pre-eruption assessed market value of the property with a limit of $230,000 for primary and secondary residences; therefore, homes without proper permitting would have no way of knowing the assessed value. The County of Hawai‘i is currently in Phase 3 of the process with Phase 1 beginning in April of 2021. Residents who were approved in Phase 1 are expected to get their payments by the end of 2022, four years after the eruption.

**Revitalize Puna**

Revitalize Puna is a project of Hawai‘i County and other community partners that focuses on strategic placemaking opportunities to “bring to life” the Kīlauea Recovery and Resilience Plan (Kīlauea Eruption Recovery, n.d., b). The project is funded by a $225,000 Rural Placemaking Innovation Challenge grant from the US Department of Agriculture and focuses on strengthening human and social capital as well as demonstration projects that enhance the district and increase economic productivity. The County holds free, quarterly community activation events in the district with local crafts, art, food, and music as well as holds space to discuss recovery efforts.

**Vibrant Hawai‘i**

To address the issues regarding housing affordability, a local non-profit – Vibrant Hawai‘i – is working in collaboration with Hawai‘i County to create “Vibrant Communities.“ The Vibrant Communities project is a model for small-scale, place-based, affordable housing developments for lower-middle income community members in Hawai‘i County (Hawai‘i Island Housing Coalition, n.d.). The communities will be approximately 5-10 units and focus on creating a sense of belonging among its residents through community building opportunities like community gardens and neighborhood trainings in CPR, first aid, and conflict resolution. This research project will support the Vibrant Communities project by identifying existing housing typologies and housing needs as well as creating recommendations for reforming regulations that may create barriers to the development of these small-scale, affordable communities or other affordable housing.
POLICY RECOMMENDATIONS

While there are many policy recommendations that could be made to create a more holistic and improved district, for the sake of this report I will be focusing solely on recommendations related to housing. However, it is important to note that the availability and affordability of housing cannot be increased without also addressing the major deficiencies in infrastructure, essential services, economic development, recreation, and food access. I would also like to note that while my research focuses on the Puna District specifically, making policy changes in Puna alone will not solve the housing issues facing the district. Changes must be made across Hawai‘i County and the State of Hawai‘i otherwise people will continue to relocate into Puna and exacerbate the current concerns.

In addition to what is already being done by Hawai‘i County and regional partners, I propose the County of Hawai‘i make these additional policy and planning changes in Puna:

1. Decrease sprawl and concentrate housing density and essential services near town centers, specifically Paho‘a and Kea‘au.
2. Change zoning designations to allow for an increased range of housing typologies including:
   a. Movable and modular homes;
   b. At least one ‘Ohana dwelling on all lots and multiple dwellings on larger lots as long as the minimum building site for each dwelling is 7,500 square feet;
   c. Middle housing types such as duplexes, triplexes, fourplexes, townhomes, and row houses particularly near town centers; and
   d. Multifamily apartments and condominiums in town centers.
3. Amend the residential building code to accurately reflect the climate and island lifestyle.
4. Increase availability of subsidized rental housing and special needs housing including senior housing.

Recommendation 1:
Decrease sprawl and concentrate housing density and essential services near town centers, specifically Paho‘a and Kea‘au

This recommendation is already stated as a planning goal in the Puna Community Development Plan in 2008; however, there has been little to no progress on these plans. As stated in the policy analysis section, most of Paho‘a is still zoned for agricultural use which is comprised of large lots and sprawling residential development. However, town centers should be comprised of denser residential and commercial development. The plans for town centers in the Puna CDP are well thought out and effective. My recommendation is to urge Hawai‘i County to not let those plans sit on a shelf, and instead put them to use and provide additional housing and services near Paho‘a and Kea‘au at a faster rate than what is currently being developed.
Recommendation 2: 

*Change zoning designations to allow for an increased range of housing typologies*

Increasing allowable housing typologies in Puna, especially near town centers, is essential to ensuring housing remains affordable. Traditional, stick-built, single-family detached homes on large lots inherently cost more than housing that shares land, is movable, or is built off-site. I recommend changing zoning designations in the district to allow for increased housing options.

**Movable and Modular Homes**

In an area that has a history of lava inundation, allowing for movable and modular homes seems like common sense. Movable dwellings can come in a range of types including mobile homes, tiny homes on wheels, or any type of dwelling that can easily be moved. Based on the current zoning code, mobile homes are not allowed in Puna unless they are moved every thirty days. Changing the zoning code in Puna to allow for movable homes will not only provide a way for people to move their homes in emergency situations such as volcanic eruptions, but it will also provide more affordable housing options to residents.

**‘Ohana Dwellings**

An ‘Ohana dwelling is essentially a secondary dwelling unit that is often used to housing relatives similar to an accessory dwelling unit. Currently, ‘Ohana dwellings are permitted in residential, residential-agricultural, family agricultural, and agricultural zoning designations in Hawai‘i County. However, some subdivision homeowner associations (HOA) in Puna do not allow for ‘Ohana dwellings. I recommend that Hawai‘i County supersedes the HOA regulations in the district to allow for ‘Ohana dwelling on all lots.

Additionally, since Puna is comprised of larger lots ranging from half an acre to five or more acres, I recommend the County of Hawai‘i amend the residential zoning code to allow for multiple ‘Ohana dwellings on large lots as long as the building site for each dwelling is at least 7,500 square feet. This will allow for residents to create village clusters that will accommodate multigenerational living styles. Allowing for multiple ‘Ohana dwellings will decrease doubling up or overcrowding in households as well as allow the residents to make better use of large lots.

**Middle Housing**

Middle housing typologies such as duplexes, triplexes, fourplexes, townhomes, and row houses are often missing from the housing stock. However, middle housing provides naturally affordable housing options by sharing land and development costs across multiple units on the same lot or subdivided lots. These housing types can be offered as rentals or homeownership opportunities and are most effective when located near town centers with access to essential services. I recommend that residential zoning designations near the town centers of Paho‘a and Kea‘au are amended to allow for middle housing types to expand housing options available to residents.
Apartments and Condominiums
Multifamily apartments and condominiums are another form of housing that shares land and development costs across many units. Currently there is little to no multifamily residential development in Puna. I recommend amending the residential zoning code to allow for apartment and condominiums to be developed near the town centers of Pahoā and Kea'au. Constructing more multifamily developments will provide more affordable rental and homeownership opportunities for residents especially first-time homebuyers and retirees looking to downsize. It will also be subject to the County of Hawai‘i’s Housing Code (Chapter 11) which mandates that 20% of units must be affordable for at least 15-20 years (for sale and rental units respectively) for all developments with more than five units (County of Hawai‘i, Section 11-4, 2016). This would provide substantially more affordable housing for residents in Puna.

Recommendation 3:
Amend the residential building code to accurately reflect the climate and island lifestyle
The Hawai‘i County residential building code follows the International Building Code (IBC) standards which is adopted in all 50 states in the US as well as the District of Columbia, Guam, Northern Marianas Islands, the US Virgin Islands, and Puerto Rico (Kelechava, 2021). While adopting the IBC in Hawai‘i County minimizes confusion among different states and provides congruity, it lacks specifications for the Hawai‘ian climate and lifestyle. For instance, mandating that housing in Hawai‘i fit the same codes as a cold and snowy state like Minnesota does not quite make sense. Therefore, I recommend that amendments be made to the Hawai‘i County residential building code to allow for flexibility with building materials and styles such as allowing for walls without insulation or with screening or open-air elements. This will make housing cheaper and easier to build while providing adequate shelter for the milder climate in Hawai‘i.

Recommendation 4:
Increase availability of subsidized rental housing and special needs housing including senior housing
Finally, it is essential that more subsidized rental housing and special needs housing be developed in the town centers of Pahoā and Kea'au. Especially with the recent displacement of residents due to the 2018 Kīlauea eruption, residents need housing that is affordable particularly for low- to moderate-income households. Special needs housing such as senior should also be prioritized in town centers, so older residents can live close to essential services without risk of isolation in times of need.
Puna provides a unique urban planning case study due to its complex qualities of hazard mitigation, rural and suburban characteristics, and low- to moderate-income population. Planning for housing in Pele’s workshop may be difficult, but it is not impossible. Using community-informed planning highlights the best traits of a community as well as the most pressing concerns in a relatively short amount of time compared to other methods.

Through a mixed method research approach, I conducted a policy analysis, windshield survey, online survey, and resident interviews to gain a deeper understanding of the housing needs, experiences, and preferences of residents living in the Puna District. I have learned so much over the process of conducting my research. I knew it would be impossible to synthesize everything I learned into a single report with just a few recommendations. With that being said, I would like to note that my work is not comprehensive of all the experiences and preferences of the Puna residents. Rather, it is a small subset that was deeply analyzed to draw conclusions for the district.

However, from my research I have identified that residents in Puna have a deep connection to the land and their home, a strong respect of Madame Pele, a need for more affordable and diverse housing options, and access to improved infrastructure and essential services. To address these needs, I recommend that the County of Hawai‘i (1) decrease sprawl and concentrate housing density and essential services near town centers, specifically Pahoa and Kea‘au; (2) change zoning designations to allow for an increased range of housing typologies such as movable and modular homes, ‘Ohana dwellings, middle housing, and multifamily housing; (3) amend the residential building code to accurately reflect the climate and island lifestyle; and (4) increase availability of subsidized rental housing and special needs housing including senior housing. While this is not a comprehensive list of the only things that should be changed, these policy recommendations reflect the most urgent needs that should be addressed to meet the needs of the Puna residents. Additional policy changes through Hawai‘i County and the State of Hawai‘i should also be considered to ensure that displacement of Puna residents is halted or slowed.

The biggest takeaway of my research was getting a glimpse of the immense love the residents have for Puna and their willingness to share that with me and others. It was a gift to be able to conduct my research in this district and learn from so many intelligent and kind people. I hope my work is able to uplift the voices of the community and provide assistance to the County of Hawai‘i as well as other jurisdictions that may be facing similar planning dilemmas.
ALOHA DOES NOT BURN

By: Kendra Tidwell

If I could do an acid rain dance and call the burning from above at least my house would stand a chance to still be the home I've dreamed of. Oh, the waters of a tidal wave - how I'd splash and wade with joy! And for a tsunami, I'd be brave, because they leave after they destroy. I'd ride out a single earthquake - heck, even more than one! Because after that scary sudden shake I'd know that it was done. The gentle breeze of a hurricane is welcome to come and blow. What's a little wind and rain compared to a lava flow? If a fire passed through in a flash it'd be a minor interruption. I could handle the soot and ash easier than this eruption. A landslide sounds downright fun! And tornados stick to their path. Because once they're done - they're done, you get to deal with the aftermath. Smoke and gas would be just fine. Or a flood! A preferable plight! But all we've got is this fault line and magma with no end in sight. Homes are gone, it sure seems bleak. But even if we can't return, lava isn't all that makes us unique - Aloha just does not burn.


County of Hawai'i Department of Public Works. (n.d.). Electronic Processing and Information Center (EPIC) System. County of Hawai'i.


APPENDIX

Section 1: Survey Questions & Responses

1. How long have you lived in or around the Puna District?
2. What area of Puna do you live in?
3. How many people are in your household including yourself?
4. How would you describe your current housing type? Select all that apply.
5. Do you rent or own your home?
   a. Do you have an 'Ohana dwelling on your property?
6. Have you experienced housing insecurity while living in or around the Puna District?
7. What is your annual household income?
8. Do you feel housing-related needs (costs, access, location, security, etc.) negatively impacts your overall quality of life?
9. About how much of your monthly gross income do you pay on housing related costs?
10. If you have any other thoughts you would like to share related to housing in Puna, please share them below.
11. Are you willing to participate in a housing study interview to further assist in my research? The interviews will be conducted at a place of your choosing between June 29th-July 10th and should last for about 30 to 60 minutes.

How long have you lived in or around the Puna District?

- 16% 1-5 years
- 16% 5-10 years
- 56% 20+ years

[Bar chart showing distribution of responses]
What area of Puna do you live in?

How many people are in your household including yourself?
How would you describe your current housing type? Select all that apply.

- Single-family home
- Apartment
- Manufactured home
- Mobile dwelling
- Informal housing
- Unhoused
- Other

Do you rent or own your home?

- Rent
- Own
- Other

Prefer not to answer
Do you have an Ohana dwelling on your property?

- Yes
- No
- I'm not sure
- No, but I've considered it
- Other
- Prefer not to answer

Have you experienced housing insecurity while living in or around the Puna District?

- Yes: 62.5%
- No: 37.5%
- Prefer not to answer: 0%
- I'm not sure: 0%
What is your annual household income?

- $25,000 or less
- $25,000 to $50,000
- $50,000 to $100,000
- $100,000 or more
- Prefer not to answer

Do you feel housing-related needs (costs, access, location, security, etc.) negatively impacts your overall quality of life?

- Does not impact
- Somewhat impacts
- Moderately impacts
- Greatly impacts
- Significantly impacts
- I’m not sure
- Prefer not to answer
About how much of your monthly gross income do you pay on housing-related costs per month? (Rent, mortgage payments, utilities)

If you have any other thoughts you would like to share related to housing in Puna, please share them below.

If we were allowed, educated and encouraged to build from local materials, with some plywood and tarp or metal roofs, housing would be more affordable, could look nicer with education and help, and be less of a burden to local people and the environment. The price of land and housing increasing because of off island buyers buying up land quickly, often site unseen, and getting lots (of pristine rainforest) bulldozed into a lot they end up never seeing, is doing a lot of damage to our island and its Endemic, found nowhere else on earth, species. I wish I could do more about it.

There is no realistic "affordable" housing in Hawaii County..... In Puna, people are going to live in Lava Zone 1 and 2 with or without conforming structures; Codes in these zones should be amended to realistically meet the needs of Puna residents.....Modest, modular, movable structures have been used by our host culture for generations but are discouraged by building codes that are modeled after obsolete mainland building codes.....The situation is more critical in today's real estate market with local families being locked out by inflated real estate prices that cater to wealthy transplants........

I have a place to return to after the lava flow, but the powers that be keep changing the "rules" for rebuilding Hwy 132 and allowing us to go home. They are squandering time and Federal money and should be investigated for fraud and corruption!

Housing costs have skyrocketed during the pandemic. Remote workers and digital nomads have come from the mainland being willing to pay mainland rental rates. Local rent has doubled or tripled in the last year alone. It's become absolutely impossible to find affordable housing in lower Puna. It's also nearly impossible to buy a house in lava zone one or two without having hundreds of thousands of dollars in cash.
If you have any other thoughts you would like to share related to housing in Puna, please share them below.

<table>
<thead>
<tr>
<th>If you have any other thoughts you would like to share related to housing in Puna, please share them below.</th>
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<tbody>
<tr>
<td>After the volcanic eruption and lava flow covering my home and farm, finding affordable, suitable housing has been challenging. Because over 700 residences were covered, the market was flooded with great housing needs upon the already existing issues with affordable housing.</td>
</tr>
<tr>
<td>During the 2018 eruption and post eruption housing was very difficult to find. Homeowners with homes were placing rentals at really high rates to rent because they knew the could get more money. I had to move 6 times within the last 4 years while I had to build a new home to live in after evacuating out of my home. Also, many people who decided to wait for the County buyout program took out loans to rebuild and they still haven’t gotten any money. They are also getting a 1099 for the money they receive. This is not right!</td>
</tr>
<tr>
<td>Need low cost (non-emergency) apartments, duplexes, single family units.</td>
</tr>
<tr>
<td>Housing is way to high in pricing with the cost of everything else here in Hawaii... cost of a small home is more than my one months income. With section 8 I'm hearing many are struggling to find homes to rent that is accepting section 8 to help family that lost homes or even struggling to cover cost.</td>
</tr>
<tr>
<td>There is inadequate infrastructure in our district starting with not enough security (police force), not enough doctors, and a measly amount of service related businesses especially for repairs which can be inordinately expensive when operators charge extra travel fees to get here</td>
</tr>
</tbody>
</table>

If you have any other thoughts you would like to share related to housing in Puna, please share them below.

<table>
<thead>
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<th>If you have any other thoughts you would like to share related to housing in Puna, please share them below.</th>
</tr>
</thead>
<tbody>
<tr>
<td>We moved to Puna just 2 months ago from Hāmākua because it is the only affordable option to have land, own a home, AND build an additional unit for our parents and possibly adult children.</td>
</tr>
</tbody>
</table>
PARTICIPATE IN A GRADUATE

HOUSING RESEARCH STUDY

Do you live in Puna, Hawaii?

Would you like to share your housing experiences to help inform a graduate research study?

Then please take this quick survey!

About the Project: The purpose of this research project is to understand the housing needs, experiences, and preferences of the community. Information from the survey responses will be used to inform policy recommendations that will ensure the housing needs of the Puna residents are met.

Scan Here
Paper surveys are available upon request.

For questions, please contact: Taylor Webb
webbt5@wwu.edu
Section 3: Interview Questions

1. How long have you lived in or around the Puna District and in what area of Puna do you live? What brought you to this area?
2. How many people are in your household including yourself? Does your household contain family members of multiple generations? Does your household contain non-family members?
3. How would you describe the type of housing you live in (single-family home, apartment, manufactured, Ohana dwelling, informal, unhoused, other)? Do you rent or own your home? Do you have a CCR and/or an HOA?
4. Do you have to commute to work? If so, how far? Do you have to commute to access essential services such as grocery stores and hospitals? If so, how far? What is your primary mode of transportation?
5. Was your housing impacted by the 2018 Kilauea eruption? If so, how? Were you impacted in other ways from the eruption?
6. Have you experienced housing insecurity while living in or around the Puna District?
7. Have you had to make other sacrifices in your life in order to pay for housing related costs? Through what means have you been able to achieve housing?
8. In what ways do housing impact your overall quality of life?
9. If you could change anything about your current housing and/or living conditions, what would you change?
10. What is your vision for housing in the Puna District? In Hawaii? This can include housing type, location, access, cost, or any other desire in relation to housing.
11. Do you know of anyone else who may have similar or differing housing experiences that may be willing to talk with me?
This is the lava coming toward my house.

This is my house and fissure 8.

This is lava in my front yard.

My brother and me looking at the lava where my house used to be.
Have you ever seen hot lava before? Well, I did and I had to evacuate because the lava was coming toward my house. The lava was bright red and very hot. I saw smoke and ash. Every night we look out the window and the sky was all reddish orange. Also, my house got taken by the lava. The sky was red like an apple.

I was so scared and so sad that I was screaming and crying. So loud I got put in the corner by the door. But I was still too loud, so my Papa put me in my uncle's truck. The lava sounded like water running in the sink, but a lot louder.

Did you notice that if you shake a soda can, it will explode and it's bubbly too? So that is just like the volcano eruption but it ain't the same thing because the first one was a soda can and the second thing was lava. After the lava cooled, we were allowed to dance hula on the road right in
front of the barricade by where our house was. We danced there because people passed away in some of those houses long before the Eruption. We wanted to honor them. One of the songs we had to dance to was E Ku Mau Mau. Now we live in Hawaiian Beaches in a two-story house. I am happy there because it is bigger.

By Mystique