

The Costs of Parking in Hawai'i

Prepared for:



Prepared by:



With support from:



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Note on Study Context

The analyses and findings presented herein are based in part on cost data derived from projects implemented in 2019 or earlier, and on consultations, interviews and research conducted in the first quarter of 2020. From approximately February 2020, the COVID-19 pandemic caused major economic, fiscal, social, and business disruptions in Hawai'i, as it has worldwide. At the time of this writing, little data exists on the pandemic's impacts on development markets, costs, and financing, and the nature and timing of a recovery is uncertain.

Study Background

This report presents representative costs for developing, operating, and maintaining common types of parking facilities in the state of Hawai'i. This review was undertaken for Ulupono Initiative by PBR HAWAII (PBR), with assistance from Hawai'i-based construction cost consultant Rider Levett Bucknall (RLB).

The narrative portion of this report is intended as a brief summary of findings. More information on sources, methodologies, and conclusions are presented in the exhibits that follow.

Study Goals

The goals of this study were to:

1. Provide information on holistic costs of several types of common parking facilities within five Hawai'i geographic areas identified in the next section, including representative estimates of:
 - a. Direct construction and land costs incurred in developing the facilities;
 - b. Required numbers of parking stalls and their associated costs under various applicable or proposed county code standards; and
 - c. Potential cost impacts of the required parking to a set of diverse housing and commercial situations, or "profiles," selected in consultation with Ulupono.
2. Provide design, cost, and other information on specific representative parking facility projects for which such information can be released.
3. Consider other indirect costs of parking facilities.

Study Parameters

The study addresses costs of representative parking facility types in five Hawai'i geographies: urban Honolulu, other parts of O'ahu,¹ and on the islands of Maui, Kaua'i, and Hawai'i. In all cases, properties selected for analysis were derived from those areas in each geography most likely to have new development of the project types described.

The representative parking facility types evaluated were:

- **Structured, multilevel podium parking** for a high-rise urban Honolulu residential or mixed-use (commercial/residential) development.

¹ "Urban Honolulu" examples used herein assume the properties are within Honolulu's Primary Urban Center, within one-half mile of a future transit station, and are zoned Apartment or Business Mixed-Use (BMX). This combination results in no parking minimum requirements under certain code standards. All other areas of O'ahu are referred to herein as "Other O'ahu". The Other O'ahu examples used herein are largely from the 'Ewa Plain because that is where most of O'ahu's non-urban development is currently occurring. For these purposes, Other O'ahu properties are assumed to not be within one-half mile of a current or future transit station, and to be zoned residential. This combination would result in minimum parking requirements.

- **On-grade parking** in Other O‘ahu, or on the islands of Maui, Kaua‘i, or Hawai‘i, for:
 - A low- or mid-rise residential development, and
 - A commercial development.
- **Free-standing, multilevel structured garage parking** for a commercial establishment in the five identified jurisdictions.

The evaluation did not consider tandem or “tuck-under”² parking stalls.

The assessments presented herein are based on analysis of budgets for construction projects recently completed in the islands, with adjustments for special features and geography. Preliminary results were further validated and adjusted as appropriate, based on available data on actual contractor bid data, interviews with knowledgeable parties, and public records. All dollar figures are presented in 1Q 2020 dollars unless otherwise stated.

Representative Direct Cost Estimates

Inclusions and Exclusions

Direct cost estimates were based on “hard” and “soft” construction cost assessments provided by RLB, and on recent hard costs identified in consultation with an O‘ahu residential developer. Land costs were analyzed and added to these development cost estimates by PBR.

- **Hard costs include:**
 - Sitework such as clearing, grading, and utility connections
 - Paving and striping
 - Parking control equipment, where applicable
 - Landscaping, irrigation, and lighting, where required
 - Stormwater drainage facilities
 - For structured parking:
 - Super structure
 - Exterior enclosures, stairwells
 - Elevators/elevator lobby³
 - Heating, ventilation, and air conditioning (HVAC)
 - Fire protection
 - Plumbing and electrical
- **Soft costs are** based on a pro rata allocation of the overall budgets in these categories:
 - Design, engineering, and permitting
 - Project management
 - Development fee, if applicable
 - Furniture, fixtures, and equipment (FF&E) other than elevator and control equipment
- **The costs reported herein do NOT account for:**
 - Operating or holding costs during development such as real property taxes, insurance, accounting, and legal expenses

² Tuck-under parking is a style of parking sometimes provided in townhouse or other two-story structures, where a ground floor area is open and used for parking, with a second floor living space above it.

³ A cost allocation between residential and other uses and the parking facility was estimated in cases where the elevator or lobby is shared between uses.

- Demolition, if applicable
- Special foundations or earthwork, extraordinary drainage solutions, etc.
- Owner’s contingency
- Special amenities such as up-market finishes, solar panel covers, etc.
- Loading docks and associated areas

The costs of required special facilities, such as accessible stalls, a mix of compact versus standard sized stalls, bicycle parking, or electric vehicle charging facilities, were not identified separately, but rather are included in the overall cost of any project, and averaged into the cost per parking space reported herein.

Information Sources

The direct construction cost estimates used for structured parking, whether in podium or free-standing garage configuration, were prepared by RLB based on selected prototype developments or recent contractor bid data for recently completed facilities. RLB adjusted this information for unique design considerations and location.

For on-grade parking, this study relies primarily on recent construction cost data that was shared by a West O’ahu residential developer, with adjustment for soft costs, geographic factors, and landscape, irrigation, and lighting costs where required.

Applicable land costs were developed by PBR based on the average footprint of each parking facility type, and 2020 real property tax assessed values of land for comparable facilities in each geographic area.

Estimated Costs by Type and Geography

The study concluded that the estimated development costs per space, including hard and soft construction and applicable land costs, range as follows (see Exhibit 1 for details):

- **Structured, multi-level podium parking, urban Honolulu** - \$42,000 per space, or about \$127 per square foot of gross floor area (GFA) (assumes no land cost since other development is “stacked” on top of the podium parking levels)
- **On-grade parking for mid- to low-rise residential development:**
 - Other O’ahu - \$22,500 per space, or about \$63 per square foot
 - Maui - \$15,200 per space, or about \$42 per square foot
 - Kaua’i - \$7,000 per space, or about \$19 per square foot
 - Hawai’i - \$4,200 per space, or about \$12 per square foot
- **On-grade parking for commercial development:**
 - Other O’ahu - \$25,400 per space, or about \$71 per square foot
 - Maui - \$23,200 per space, or about \$64 per square foot
 - Kaua’i - \$13,500 per space, or about \$38 per square foot
 - Hawai’i - \$12,900 per space, or about \$36 per square foot
- **Free-standing garage parking for commercial development:**
 - Urban Honolulu - \$57,000 per space, or about \$173 per square foot
 - Other O’ahu - \$53,000 per space, or about \$161 per square foot
 - Maui - \$59,900 per space, or about \$182 per square foot
 - Kaua’i - \$60,400 per space, or about \$183 per square foot
 - Hawai’i - \$55,400 per space, or about \$168 per square foot

Parking Requirements

County Parking Standards

Currently, commercial parking codes for each county generally require about one space per 300 square feet GFA, whereas residential requirements vary broadly by county.

The generally applicable current parking standards for the geographic areas considered include:

- O‘ahu – Revised Ordinances of Honolulu (ROH) Chapter 21, Article 6
- Maui – Maui County Code Title 19, Article II, Chapter 19.36B
- Kaua‘i – Kaua‘i County Code Title IV, Chapter 8, Article 4 (residential) and Article 6 (commercial)
- Hawai‘i – Hawai‘i County Code Chapter 25, Article 4, Division 5

Honolulu, Maui and Kaua‘i counties also have special rules that apply in Transit Oriented Development (TOD) or other higher-density or mixed-use planned areas, and in Honolulu, special rules apply in portions of Kaka‘ako, as administered by the State Hawai‘i Community Development Authority (HCDA). Additionally, the City and County of Honolulu (City), is currently considering modifications to existing parking standards. These special or proposed rule standards generally reduce parking requirements compared to the typical standards currently applicable current standards.

Requirements for Hypothetical Residential Developments

As part of this study, twelve hypothetical development project types were evaluated in terms of the number of parking stalls that would be required under various code standards. Since most code standards relate to residential unit size, development prototypes were prepared with consideration to development products that represent the intended market orientation, with respect to density and unit mix by bedroom type and unit size. These prototypes are derived from recently developed representative projects.

Market orientations are defined in terms of “market”, “affordable” and “mixed-income” (some market and some affordable) projects, with affordability standards described in terms of percent of the area median income (AMI), the benchmark typically used by public agencies that administer such projects. The hypothetical project types along with their associated overall parking requirements⁴ under various code standards considered in this study are shown in Exhibit 2. The hypothetical projects evaluated include:

- **High-rise residential** developments within urban Honolulu, including affordable, mixed-income, and market-oriented buildings, with both for-sale and rental examples.
- **Low- or mid-rise multifamily rental housing** developments, positioned as affordable housing in Other O‘ahu and on Maui, Kaua‘i and Hawai‘i islands.
- **Low- or mid-rise multifamily for-sale housing** developments, positioned as mixed-income housing in Other O‘ahu, and market-priced housing on Maui, Kaua‘i, and Hawai‘i islands.

The exhibit also presents references to and explanations of the various code standards applied.

⁴ Parking requirements shown are average per unit and should be considered representative for each product type. Actual impacts would vary for any given unit depending on its size, and on management’s allocation of stalls or and associated costs within any given project.

Requirements for Hypothetical Commercial Developments

Ten hypothetical commercial development types were evaluated in terms of the representative parking requirements under the various code standards. Commercial development standards are stated in number of spaces per 1,000 square feet GFA. The hypothetical project types evaluated include:

- **Commercial shopping centers**, assumed to be grocery-anchored, ranging from:
 - 110,000 square feet GFA in urban Honolulu, with garage parking
 - 100,000 to 160,000 square feet GFA in Other O’ahu, Maui, Kaua’i or Hawai’i, with surface parking
- **Large single-user commercial stores**, ranging from:
 - 70,000 square feet GFA in urban Honolulu, with podium parking.
 - 160,000 square feet GFA in Other O’ahu, Maui, Kaua’i, or Hawai’i, with surface parking

Existing parking standards are 3.3 spaces per 1,000 square feet GFA in all the jurisdictions under currently applicable code standards, whereas TOD/mixed-use, HCDA, or Bill 2 (2020) standards would range from 0.0 to 3.3 spaces per 1,000 square feet GFA, as detailed in Exhibit 3.

Development Costs by Product Type

Combining the findings of cost per space and average space requirement per applicable unit demonstrates the representative direct parking costs per home or per commercial area.

Residential Areas

Exhibit 4 presents the representative direct costs for providing parking related to each of the twelve hypothetical residential development scenarios. Under currently applicable codes, the potential development costs of parking associated with the home-types analyzed in this study ranges as follows:

- **High-rise residential** developments within urban Honolulu (assumes podium parking):
 - Affordable and mixed-income rentals - \$55,000 per residential unit.
 - Mixed-income and market for-sale units - \$69,000 to \$77,000 per residential unit.
- **Low- or mid-rise multifamily housing** developments (assumed surface parking) – these were considered on all four islands and therefore representative prices show wide variation:
 - Affordable rental units - \$5,000 to \$35,000 per residential unit, with wide variation primarily due to the differential cost of land, with O’ahu’s land costs highest and Hawai’i island’s lowest.
 - Mixed-income or market-priced for-sale units - \$5,000 to \$45,000 per residential unit, again ranging widely due to differential land costs.

TOD/mixed-use, HCDA, and Bill 2 (2020) rules would result in fewer units required per home and therefore lower average costs.

Commercial Areas

Exhibit 5 presents the representative direct costs for providing parking related to each of the hypothetical commercial development scenarios. Under currently applicable codes, the representative cost of parking for each 1,000 square feet GFA ranges as summarized below; again, the wide variations are in part due to variance in typical land costs in each geographic area:

- **Commercial shopping centers:**
 - In urban Honolulu (garage parking) - \$190,000 per 1,000 square feet GFA.
 - In Other O’ahu, Maui, Kaua’i or Hawai’i (surface parking) - \$43,000 to \$85,000 per 1,000 square feet GFA.
- **Large single-user commercial stores:**
 - In urban Honolulu (podium parking) - \$140,000 per 1,000 square feet GFA.
 - In Other O’ahu, Maui, Kaua’i or Hawai’i (surface parking) - \$45,000 to \$101,000 per 1,000 square feet GFA.

TOD/mixed-use, HCDA, and Bill 2 (2020) rules would result in fewer units required per commercial GFA and therefore lower average costs.

Carrying Costs of Private Parking

While the study was not able to obtain useful operating and maintenance cost data for public parking facilities, a number of interviews were conducted with owners or operators of private commercial and residential facilities on O’ahu. A rough order of magnitude estimate of the carrying costs⁵ of three representative parking types was estimated – an urban Honolulu residential high-rise with podium parking; Other O’ahu low- or mid-rise residential with surface parking; and a single-user commercial establishment in Other O’ahu with surface parking. Key underlying assumptions include:

- Carrying costs are estimated per parking space.
- Construction and land costs are as previously presented for these development types.
- Commercial lending rates of 4% interest carry over a 20-year term – this may understate actual carrying costs, since only a portion of development costs would be covered by borrowing, while the cost of equity can be assumed to be considerably higher.
- Current O’ahu residential and commercial real property tax (RPT) rates are \$3.50 and \$12.40 per \$1,000 land costs. For the podium parking example, RPT is not attributed to the parking facility building since it is the City and County’s practice to associate building assessed value with the residential units and not the parking facilities per se. This could understate the RPT burden in this instance.
- Other operating and maintenance costs are based on the experience of several operators of private structured and on-grade parking on O’ahu.

Results of this analysis are set forth in Exhibit 6. Total annual carrying costs per space range from approximately \$2,200 or \$2,400 for on-grade parking, to up to \$4,900 for the urban Honolulu podium parking. These would represent monthly carrying costs ranging from \$180 to \$410 per space.

⁵ Carrying costs are defined as the ongoing costs that a property owner would incur to operate and maintain the parking facilities. These would include amortization of the initial parking construction (or facility purchase) cost, maintaining control equipment, utilities, staff, cleaning, repairs and maintenance, as well as ongoing budget allowances for legal services, insurance real property taxes associated with land occupied by the parking. In order to simplify the analysis, the amortization of construction costs assumes an interest rate of 4% over 20 years. Actual commercial or residential mortgage rates, investment criteria or other terms that would apply to any given property would vary.

Impact Profiles

Even when parking is offered “free of charge”, the costs of its development and operations may be passed on to consumers in various forms, directly or indirectly. To shed light on the potential impact of such costs on residents’ housing and retail expenditures, the study reviewed parking costs that could apply to residents and shoppers on O’ahu.

Selected Profiles

Ulupono and PBR selected six hypothetical O’ahu profiles for evaluation, representing five possible households and one commercial facility for evaluation. They include:

- **Three renter household profiles:**
 - A single person in their mid-20s, renting in an urban Honolulu high-rise
 - A senior couple, renting in an urban Honolulu high-rise
 - A family of three renting a townhouse in Other O’ahu
- **Two home-buyer household profiles:**
 - A family of three purchasing a condominium in an urban Honolulu high-rise
 - A family of four purchasing a townhouse in Other O’ahu
- **A hypothetical commercial center or single-user store** located outside of the urban core, such as in Kapolei is considered.

Characteristics of the six profiles are summarized below, along with potential unit types and sizes, drawn from comparison to representative facilities on O’ahu.⁶ Residential units in a high-rise structure are assumed to be associated with podium parking built into the first five stories of the building, while the townhome and commercial examples are assumed to be served by surface parking.

Table: Characteristics of Hypothetical Household and Facility Type Profiles

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6
	Affordable apartment for-rent			Market/mixed income home for-sale		Commercial store
	High rise	High rise	Townhouse	High rise	Townhouse	
Household profile	Single person, 20s	Couple, seniors	Family	Family	Family	n/a
Household size	1	2	3	3	4	n/a
Unit type	Studio	1B	2B	2B	3B	Single-user facility
Unit size (sq. ft.)	400	600	750	1,000	1,200	160,000
Location	Urban Honolulu	Urban Honolulu	Other O’ahu	Urban Honolulu	Other O’ahu	Other O’ahu
Parking type	Podium	Podium	Surface	Podium	Surface	Surface

⁶ On June 17, 2020, the Economic Research Organization at the University of Hawai’i (UHERO) published a blog regarding the need for rental assistance in Hawai’i in light of the COVID-induced economic downturn. The blog considers two renter household examples: a single mother earning \$30,000 per year with two children, who pays \$1,500 per month for a small 2-bedroom apartment; and a middle aged couple with an adult son at home, whose combined incomes are \$95,000 and who rent a single-family home for \$3,000 per month. We note here that Profile 3 could represent the single mother’s household, while the couple with adult son could alternatively be renting the townhome illustrated as Profile 5 from an owner-investor.

Illustrative Costs

Exhibit 7 contains the analysis of illustrative potential parking costs. The sections below provide a discussion of each of the selected profiles (see also Appendix A and footnote 9, below).

Rental Household Profiles

Renters do not directly pay for costs that were incurred to develop parking that may be provided for their use. However, the capital and operating costs of parking are ultimately carried by the landlord, who must recoup such costs in the form of rent or, if available, via federal or other subsidies. Thus, while the costs of developing each parking space is estimated at \$42,000 for podium parking and \$22,500 for residential surface parking (outside of the urban core), this discussion focuses on the carrying costs of the parking, under the various code standards considered.⁷ Since these are ongoing expenses to the landlord, some, or all of the carrying costs are generally passed on to the renter.

For the profiles considered, carrying costs are estimated at \$4,900 per year for each podium parking space, or about \$410 per month. For surface parking outside of the Honolulu urban core, carrying costs are estimated at \$2,200 per year per space, or about \$180 per month.

For many households, this is likely a substantial component of the resources needed to achieve adequate housing, and the carrying costs could represent a substantial portion of available subsidies for those that need it. Potential costs of parking for the three rental household profiles are as follows:

Profile 1: Single person renting a high-rise, 400-square foot studio unit in urban Honolulu (podium parking)

- Under current LUO standards, the assumed studio unit would require one space, which could impact the unit with up to \$410 per month in carrying costs, assuming the parking operations supported access control features. If the renter earned the 2020 Honolulu median income of \$88,200⁸ for a single person, and the unit was subject to HHFDC guidelines for affordable rent, this could represent up to 19% of the maximum allowable rent for this unit. If the person earned only 50% AMI, the cost of parking could represent up to 37% of the maximum allowable rent.
- Within a TOD zone,⁹ only 0.5 parking spaces would be required for this unit. On average, the studio unit would need to support \$205 in carrying costs per month in the TOD zone. However, since the tenant would either have a parking space or not, their applicable carrying costs could be considered to range between \$0 and \$410 per month, depending on how overall costs are allocated by the owner or management.

⁷ Any given development could also exceed minimum parking code requirements, for market or other reasons. This would tend to increase the carrying costs described herein proportionately.

⁸ State and County affordably-designated housing is generally subject to income, rent and sales price guidelines that are published annually by the Hawai'i Housing Finance and Development Corporation (HHFDC), based on data provided by the U.S. Department of Housing and Urban Development (HUD). This report references HHFDC's 2020 guidelines, which are summarized in Appendix A. The full set of guidelines can be found here: <https://dbedt.hawaii.gov/hhfdc/files/2020/05/2020-hud-income-rents-and-sales-price-by-counties.pdf>

⁹ TOD zones are considered to be areas within a one-half mile radius of a rail transit station.

- Based on proposed changes to the code, there would be no minimum parking required,¹⁰ thus carrying costs would not accrue based on the standard; any applied costs would be based on the number of spaces actually developed and/or assigned to the tenant.
- If the building is located in Kaka’ako, current HCDA rules would require 0.9 parking spaces for a unit of this type, representing up to \$370 in monthly carrying costs for the tenant. However, similar to the TOD zone costs, applicable costs to this tenant could be expected to range between \$0 and \$410 per month.

Profile 2: Senior couple renting a high-rise, 600-square foot 1-bedroom unit in urban Honolulu (podium parking)

Monthly carrying costs for this renter would be the same as shown above, based on the assumed 600-square foot unit size. Under current HHFDC guidelines that would be applicable to a unit that was classified as “affordable”, if the couple was earning the median income of \$100,800 for a 2-person household, the maximum rent that could be charged for this unit would be \$2,362. Therefore, the estimated \$410 monthly carrying cost could represent up to 17% of the allowable rent for this unit. If the couple was earning only 50% of the AMI, the carrying costs of this parking could represent up to 35% of the maximum allowable rent for this unit.

Profile 3: Family of three renting a 2-bedroom, 750-square foot townhome outside of the urban core (other O’ahu) (surface parking). Note that, in addition to a “traditional” family, this household could represent a single parent with two children, such as was postulated by UHERO (see footnote 6), or many other family dynamics.

- Under current LUO standards, the assumed 750-square foot unit would require 1.5 spaces, which could be expected to burden the unit with an average \$270 per month in carrying costs. If the unit were subject to HHFDC guidelines for affordable rent, and the family’s earnings were at the median level for a 3-person household, this could represent up to 9% of its maximum rent. If the family earned only 50% of AMI, parking costs would represent up to 19% of its maximum rent.

However, assuming that the unit will have at least one parking space, or possibly two, applicable carrying costs could be considered to range between \$180 and \$360 per month, depending on how overall costs are allocated by management.

- Within a TOD zone, 0.75 parking spaces would be required for the assumed 750-square foot unit.¹¹ Each such unit would need to support \$140 in carrying costs per month. However, with a parking ratio of 0.75 stalls per unit, the family would either have one parking space or no parking space, its applicable carrying costs could be considered to range between \$0 and \$180 per month, depending on how overall costs are allocated by management.
- Based on proposed changes to the LUO, the hypothetical 2-bedroom townhouse would result in approximately 0.94 spaces (one per 800 square feet of the project area), or \$170 in carrying costs per month. As noted above, however, the family can be assumed to either have one parking space

¹⁰ For purposes of evaluating the proposed LUO changes, all “urban Honolulu” examples assume the property is within Honolulu’s Primary Urban Core, within one half mile of a current or future transit station, and zoned Apartment or Business Mixed-Use (BMX). This combination results in no parking minimum requirements under currently proposed changes to the LUO.

¹¹ Although assumed to be outside of Honolulu’s urban core, this could apply, for instance, in certain areas of Kapolei or other TOD zones being established by the City and County.

or no parking space, so the associated carrying costs could be assumed to range from \$0 to \$180 per month.

- Profile 3 is not located in Kaka'ako.

Home Buyer Profiles

The purchase price paid by a home buyer can be expected to reflect the cost of developing the home's associated parking. Additionally, since much of Hawai'i's rental inventory consists of individually owned units that are rented out, some or all of the carrying costs of such investments could also be passed on to renters. Representative development and carrying costs of an individual space in the for-sale market is assumed to be the same as for rentals, with variation depending on the type of parking facility. As noted above, capital costs are estimated at \$42,000 per space for podium parking and \$22,500 for surface parking (outside urban Honolulu/Other O'ahu), with associated monthly carry costs of \$410 and \$180, respectively.

Profile 4: Family of three that buys a high-rise 2-bedroom, 1,000-square foot unit in urban Honolulu (podium parking)

- Under current LUO standards, the assumed 1,000-square foot unit would have a parking requirement of two spaces, adding \$84,000 to the purchase price. Compared to the 2019 Honolulu median condominium sales price of \$425,000,¹² the required parking can be seen to account for about 20% of the purchase price.

Using the HHFDC guideline of a 30-year fixed mortgage term, 5% down and an assumed 4.0% interest rate, the mortgage on this unit would be expected to be \$1,346. At 20% of the purchase price, the two parking spaces could be seen to account for some \$266 of the monthly mortgage payment.

One can also consider a representative carrying cost for the two spaces of about \$820 per month (\$410 each, as shown in Exhibit 6), assuming there were parking controls that needed to be maintained with costs borne by the unit owner. Should the owner rent out the unit, some or all of this burden would likely be passed on to the renter.

- Within a TOD zone, only one parking space would be required for the hypothetical 1,000-square foot unit. Thus on average, the minimum parking could be seen to have accounted for \$42,000 of the purchase price, or some \$410 in carrying costs per month.
- Based on proposed changes to the LUO, there would be no minimum parking standards, thus capital and carrying costs would reflect the number of spaces actually built and/or acquired by the owner.
- If the building is located in Kaka'ako, current HCDA rules would require 1.35 parking spaces for a unit of this type, representing capital costs estimated at \$56,700, or some \$555 in monthly carrying costs. Since the unit buyer would presumably purchase at least one parking space, or possibly two, representative costs could be assumed to range between \$42,000 and \$84,000, for capital costs, or \$410 to \$820 in monthly carrying costs.

¹² Honolulu Board of Realtors®.

Profile 5: Family of four that buys a 3-bedroom, 1,200-square foot townhome outside of the urban core (surface parking)

- Under current LUO standards, the assumed unit would require two spaces, accounting for about \$45,000 of the purchase price, or some \$360 per month in carrying costs. If an investor-buyer subsequently rents the unit, some, or all of these carrying costs may get passed on as rent.

Compared to the 2019 Honolulu median single-family sales price of \$789,000, the required parking accounts for about 6% of the purchase. A median townhouse price was not available.

Again using the HHFDC guideline of a 30-year fixed mortgage term, 5% down and an assumed 4.0% interest rate, the mortgage on the \$789,000 unit would be \$2,499. At 6% of the purchase price, the two parking spaces could be seen to account for some \$143 of the monthly mortgage payment.

One can also consider a representative carrying cost for the two spaces of about \$360 per month (\$180 each, as shown in Exhibit 6), assuming there were no parking controls that needed to be maintained with costs borne by the unit owner. Should the owner rent out the unit, some or all of this burden would likely be passed on to the renter.

- Within a TOD zone, only one parking space would be required for the hypothetical unit.¹³ Thus on average, the purchase price of each unit would include at least \$22,500 in parking development costs. In terms of carrying costs, this up-front cost together with operating costs could represent some \$180 per month. If the unit were associated with more than the minimum required parking, costs would be proportionately higher.
- Based on proposed changes to the LUO, the hypothetical 3-bedroom townhouse would require at least 1.5 spaces. This represents an average \$33,800 in capital costs, or some \$270 in carrying costs per month. As noted, however, the unit can be assumed to be associated with one or two spaces, so the associated capital costs might be seen to range from \$22,500 to \$45,000, and the monthly carrying costs to range from \$180 to \$360.
- Profile 5 is not located in Kaka'ako.

Commercial Facility Profile

This last profile assumes a 160,000-square foot single-user commercial store in Other O'ahu, with unattended surface parking. The development cost per space is estimated at \$20,400, or about 9% less than estimated for residential surface parking. The differential is attributed to lower land costs in areas where such commercial development has been occurring on O'ahu, compared to residential land costs. The associated monthly carrying costs are estimated at \$180 per space.

Profile 6: 160,000-square foot "big box" store outside of the urban core (Other O'ahu) (surface parking)

- Under current LUO standards, the assumed 160,000-square foot store would require 534 spaces, or 3.3 per thousand square feet of commercial area. This could be expected to cost some \$10.9 million to develop. At an average GFA of about 355 square feet per stall for surface parking, this would represent nearly 190,000 square feet of parking, about 4.3 acres, or more area than the store itself.

¹³ Although assumed to be outside of Honolulu's urban core, this could apply, for instance, in certain areas of Kapolei or other TOD zones being established by the City and County around emerging rail stations.

The required parking would represent about \$1.28 million per year in carrying costs, assuming parking is “free” for patrons and securely maintained but unattended. Based on assumed retail sales within the store itself at \$400 to \$500 per square foot per year, the carrying costs of parking may be seen to account for at least 1.3% to 2.0% of gross sales. In other words, for every \$100 spent by consumers, \$1.30 to \$2.00 can be considered to go towards supporting parking. A family that spends \$100 per week at the establishment (\$5,200 over the year) could be considered to be paying \$68 to \$104 per year for the parking.

- Within a TOD zone, there would be no minimum parking requirement for the store.
- Based on proposed changes to the LUO, the 160,000-square foot facility would require a minimum of 320 rather than 534 parking spaces. At the average GFA 355 square feet per stall assumed above, this would represent some 114,000 square feet of parking, about 2.6 acres, or 1.7 acres less than required under the existing LUO. If the commercial establishment were able to achieve the same patronage and sales with this reduced level of parking, the savings in land could be committed to other uses.

Associated annual carrying costs would be on the order of \$770,000, or 0.8% to 1.2% of gross sales. In other words, for every \$100 dollars spent by consumers, some \$0.80 to \$1.20 go towards support the required parking. Presented differently, compared to existing LUO standards, a family that spends \$100 per week at the establishment (\$5,200 over the year) could be considered to save \$26 to \$31 per year, in the event the store was able to achieve the same patronage and sales with reduced levels of parking.

- Profile 6 is not in Kaka’ako.

Other Indirect Impacts

The analyses have demonstrated the potential indirect impacts that even “free” parking may have on expenditures for housing and retail purchases. This section briefly considers some indirect effects of the costs of parking.

Displaced Opportunities

With a typical size of 300 to 360 square feet,¹⁴ a parking stall approaches the living area of studio units currently being developed in urban Honolulu high-rise developments. Two parking spaces are easily the size of 1- and 2-bedroom units in such developments. One can imagine if that the requirement and demand for parking were reduced, more housing, commercial areas, or other mixed-use facilities could be produced within any given allowable floor area, thereby also further leveraging the substantial costs of land and infrastructure.

Such opportunities may be limited, however, by height restrictions, required development setbacks, the availability of various infrastructure systems to support the level or density of development, or other factors. Waivers or adjustments to such restrictions may be requested, although their granting is not assured.

It is noted that any increase in the targeted land use – whether it is commercial space or residential units – may also increase demand for parking, and where structured, parking facilities are typically produced

¹⁴ This average size includes travel lanes and other required support facilities and amenities, as discussed previously.

with lower ceiling heights than living or commercial spaces. Therefore, overcoming this displacement effect is likely to be somewhat less than a 1:1 opportunity.

Precluded Opportunities

The often high land and construction costs associated with parking can make some projects unfeasible altogether, especially in high land cost areas. This is especially a concern for projects involving lower or no profit margins. For instance, community service and other not-for-profit ventures may be unable to carry the development and operating costs of the parking that is required of them. Alternatively, such developments may rely on subsidy from a masterplanned development that therefore needs to recover the subsidy from other income-producing land uses, likely further burdening the cost of homes or commercial areas of the community.

Concluding Statement

This study generated representative estimates of the direct costs of developing and operating parking facilities in Hawai'i, and illustrated some of the indirect costs of parking. The intent of this study has been to raise awareness of the often very substantial costs of parking that are embedded in numerous elements of daily life.

This is not to suggest that all such costs can or should be eliminated immediately, given the diversity of housing and transportation needs across our state. However, recent initiatives to promote higher density residential and mixed-use developments (offering services in close proximity to housing and transit), to expand multimodal transportation services and choices, and to reduce minimum code standards for required housing, represent opportunities to reduce the costs of parking experienced in one way or the other by all residents, whether they drive or not.

Exhibits

Exhibit 1: Representative Cost Estimates

In 2020 1Q dollars

Location	Podium parking	On-grade parking: residential				On-grade parking: commercial				Garage parking: commercial				
	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i
Cost per stall:														
Construction	\$42,000	\$3,100	\$3,600	\$3,800	\$3,400	\$5,400	\$6,200	\$6,500	\$5,900	\$42,000	\$49,000	\$56,500	\$59,000	\$54,000
Land	\$0	\$19,400	\$11,600	\$3,200	\$800	\$20,000	\$17,000	\$7,000	\$7,000	\$15,000	\$4,000	\$3,400	\$1,400	\$1,400
Total costs	\$42,000	\$22,500	\$15,200	\$7,000	\$4,200	\$25,400	\$23,200	\$13,500	\$12,900	\$57,000	\$53,000	\$59,900	\$60,400	\$55,400
Typical GFA square feet per stall*	330	360	360	360	360	360	360	360	360	330	330	330	330	330
Cost per square foot GFA	\$127	\$63	\$42	\$19	\$12	\$71	\$64	\$38	\$36	\$173	\$161	\$182	\$183	\$168
Parking levels	7	1	1	1	1	1	1	1	1	7	5	5	5	5
Primary source for construction cost estimate	<i>RLB, based on contractor bids for 5 facilities</i>	<i>Reported on-grade expenses for recent private residential developments in West O'ahu, adjusted for soft costs, and geographic factors</i>				<i>Reported on-grade expenses for recent private residential developments in West O'ahu, adjusted for required landscape, irrigation and lighting costs, soft costs, and geographic factors</i>				<i>RLB, based on contractor bids for 5 facilities</i>	<i>RLB, based on a 355-stall Wailuku municipal parking structure</i>			

* Includes all facilities and areas associated with the development: may include elevator lobbies, stairwells, bicycle parking, mix of compact vs. standard stalls, landscaped areas and sidewalks, etc. Excludes storage facilities, waste disposal, and loading docks and areas, if any.

Sources: Rider Levett Bucknall, 2020; PBR HAWAII, 2020 (land costs); verbal estimate of recent on-grade hard construction costs by O'ahu developers.

Exhibit 2: Representative Residential Development Types and Parking Requirements

	High-rise rental		High-rise for-sale		Low-/mid-rise multifamily rental				Low-/mid-rise multifamily for-sale			
	Affordable	Mixed income	Mixed income	Market	Affordable	Affordable	Affordable	Affordable	Mixed-income	Market	Market	Market
Location	Urban Honolulu	Urban Honolulu	Urban Honolulu	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Other O'ahu	Maui Island	Kaua'i	Hawai'i
Target markets	All affordable: up to 80% AMI	20% affordable: 50-120% AMI	30% affordable: 100-140% AMI	Market-oriented	All affordable: 30-60% AMI	All affordable: 30-60% AMI	All affordable: 30-60% AMI	All affordable: 30-60% AMI	35% affordable: 100-140% AMI	Market-oriented	Market-oriented	Market-oriented
Total units	200	400	400	300	90	90	90	90	90	90	90	90
Site area	1.0	1.5	1.5	1.5	2.5	2.5	2.5	2.5	10	10	10	10
Story height	20	20	40	40	2 & 3	2 & 3	2 & 3	2 & 3	2	2	2	2
Unit sizes (sq. ft.)												
Studio	400	300	-	-	-	-	-	-	-	-	-	-
1-Bedroom	600	600	550	650	550	550	550	550	-	-	-	-
2-Bedroom	750	900	900	1,000	750	900	900	900	950	-	-	-
3-Bedroom	1,150	1,150	1,150	1,400	1,000	1,000	1,000	1,000	1,200	1,250	1,250	1,250
4-Bedroom	-	-	-	-	1,300	-	-	-	1,350	1,400	1,400	1,400
Parking type												
	Podium	Podium	Podium	Podium	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Code Standard 1 <i>(current applicable)</i>	<i>ROH Chapter 21 Article 6</i>	<i>Maui County Code Title 19 Article II Chapter 19.36B</i>	<i>Kaua'i County Code Title IV Chapter 8 Article 4</i>	<i>Hawai'i County Code Chapter 25 Article 4 Division 5</i>	<i>ROH Chapter 21 Article 6</i>	<i>Maui County Code Title 19 Article II Chapter 19.36B</i>	<i>Kaua'i County Code Title IV Chapter 8 Article 4</i>	<i>Hawai'i County Code Chapter 25 Article 4 Division 5</i>				
Total spaces	260	520	660	548	142	180	180	113	180	180	180	113
Studio	30	180	0	0	0	0	0	0	0	0	0	0.0
1-Bedroom	70	100	140	158	18	36	36	23	0	0	0	0.0
2-Bedroom	120	200	360	360	62	82	82	51	46	0	0	0.0
3-Bedroom	40	40	160	30	54	54	54	34	126	172	172	108
4-Bedroom	0	0	0	0	8	8	8	5	8	8	8	5
Average spaces/unit	1.3	1.3	1.7	1.8	1.6	2.0	2.0	1.3	2.0	2.0	2.0	1.3
Code Standard 2 <i>(TOD/mixed-use)</i>	<i>ROH Chapter 21 Article 9-100¹</i>	<i>Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use²</i>	<i>Kaua'i County Code Title IV Chapter 10 Article 5A³</i>	<i>N/A⁴</i>	<i>ROH Chapter 21 Article 9-100¹</i>	<i>Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use²</i>	<i>Kaua'i County Code Title IV Chapter 10 Article 5A³</i>	<i>N/A⁴</i>				
Total spaces	130	170	330	274	71	180	135		90	180	135	
Average spaces/unit	0.7	0.4	0.8	0.9	0.8	2.0	1.5		1.0	2.0	1.5	
Code Standard 3 <i>(proposed changes)</i>	<i>City and County of Honolulu Bill 2 (2020)⁵</i>	<i>City and County of Honolulu Bill 2 (2020)⁵</i>	<i>City and County of Honolulu Bill 2 (2020)⁵</i>	<i>City and County of Honolulu Bill 2 (2020)⁵</i>	<i>City and County of Honolulu Bill 2 (2020)⁵</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>City and County of Honolulu Bill 2 (2020)⁵</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
Total spaces	0	0	0	0	91				129			
Average spaces/unit	0.0	0.0	0.0	0.0	1.0				1.4			
Code Standard 4 <i>(special areas - HCDA)</i>	<i>HAR Title 15 Chapter 22 Section 67⁶</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A⁷</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A⁷</i>			
Total spaces	207	414	477	382								
Average spaces/unit	1.0	1.0	1.2	1.3								

Exhibit 2: Representative Residential Development Types and Parking Requirements

Location	High-rise rental		High-rise for-sale		Low-/mid-rise multifamily rental				Low-/mid-rise multifamily for-sale			
	Affordable	Mixed income	Mixed income	Market	Affordable	Affordable	Affordable	Affordable	Mixed-income	Market	Market	Market
	Urban Honolulu	Urban Honolulu	Urban Honolulu	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Other O'ahu	Maui Island	Kaua'i	Hawai'i

Footnotes

- 1 *Transit-Oriented Development Special Districts. There are no minimum parking requirements for non-residential uses. Minimum requirements for residential units includes: 0.0 spaces for units of 300 square feet or less; 0.5 spaces for units of 301 to 600 square feet; 0.75 spaces for units of 601 to 800 square feet; and 1.0 space for each unit over 800 square feet.*
- 2 *Service Business Residential Mixed-Use. The code provides for combined parking, but requirements are based on 2.0 spaces for each dwelling unit plus 1.0 space per 300 square feet of non-residential floor area.*
- 3 *Lihu'e Town Core Urban Design District. While this is not a Transit Oriented Development designation per se, multifamily dwellings require 1.5 spaces per unit generally, or the Director may allow a reduction in requirement to 1.0 space per dwelling unit if a bus or transit stop with a pullout area is provided and built to County Transportation Agency Standards.*
- 4 *There is no county-wide TOD code or mixed-use standard, but the existing zoning code provides exceptions within certain areas like downtown Hilo, Kainaliu Town and Pahoa Village. Those are not modeled here.*
- 5 *Standards analyzed are based on Bill 2 (2020) Council Draft 1, and Planning Commission recommendations according to the letter dated January 7, 2020. This allows no offstreet parking in the Primary Urban Center Development Plan and 'Ewa Development Plan areas, except in areas located in the residential, agricultural, and preservation zoning districts. Additionally, no offstreet parking is required in any zoning district within one-half mile of an existing or future Honolulu rail transit station. The minimum off-street parking ratios identified below* apply to other areas not identified above. In areas where no parking is required, any parking that is provided must meet the design, dimension, and other standards set forth in this chapter. Urban Honolulu examples assume the properties are within the Primary Urban Core, within one half mile of a current or future transit station, and are zoned apartment or BMX. This combination results in no parking minimum requirements. The Other Honolulu examples assume the properties are within the 'Ewa Development Plan, are not within one half mile of a current or future transit station, and are zoned residential. This combination would require parking minimums. *For properties zoned residential, agricultural, or preservation, the bill identifies 1.0 space per 800 square feet of dwelling or lodging area. The January 2020 letter recommends merging Commercial 1 and 2 categories with the standard requirement of 1.0 space per 500 square feet.*
- 6 *HCDA Kaka'ako Mauka Area Rules. Multifamily dwelling units, including reserved housing units, at 0.9 spaces for units less than 600 square feet; 1.13 spaces for units of 600 to 800 square feet; 1.35 spaces for units more than 800 square feet. Detached dwellings and duplex units are 2.0 spaces per unit, plus 1 space per 1,000 square feet of floor area over 2,500 square feet.*
- 7 *Hawai'i County has Community Development Plans with unique design guidelines. For example, the Kona Community Development Plan (KCDP) includes Village Design Guidelines (VDGs) that may offer reduced parking standards pursuant to master plans approved in Traditional Neighborhood Design- and/or TOD-designated areas. However, to date no such master plans are known to have been approved by the Planning Department for such purposes, and there have been conflicts between the KCPD VDGs and County zoning codes.*

Sources:

City and County of Honolulu's Revised Ordinances of Honolulu 1990 (ROH), Chapter 21 – Land Use Ordinance; Article 6 – Off-Street Parking and Loading, Added by Ordinance 99-12, Am. Ord. 03-38, 10-19, 15-41; Article 9 - Special District Regulations, 100 Transit-Oriented Development (TOD) Special Districts, -8 General Requirements and Development Standards. Added by Ordinance 09-4, Am. Ord. 17-54 (accessed March 24, 2020)

City and County of Honolulu's Design Guidelines: Transit-Oriented Development Special District, June 2018 (accessed March 24, 2020)

Hawai'i Administrative Rules (HAR), Title 15 – Department of Business Economic Development and Tourism, Hawai'i Community Development Authority, Chapter 22 – Ma uka Area Rules Kaka'ako Community Development District, Section 67 – Off-street Parking, June 2005

Maui County Code, Title 19 – Zoning, Article II – Comprehensive Zoning Provisions, Chapter 19.36B – Off-Street Parking and Loading; Ord. No. 4921 § 2, 2018 (accessed March 24, 2020)

Kaua'i County Code, Title IV – County Planning and Land Development, Chapter 8 – Comprehensive Zoning Ordinance; Article 4 – Residential Districts (R), Section 8-4.5 Standards of Development Applicable to All Residential Development, (a) Access, Driveways and Off-Street Parking, Ord. No. 935, November 14, 2012, Ord. No. 1070, February 28, 2020; Article 6 – Commercial Districts (C), Section 8-6.3 Development Standards for Commercial Development, (e) Driveways and Parking Areas, Ord. No. 935, November 14, 2012; Article 10 - Special Development Plans, Section 5A - Lihu'e Town Core Urban Design District, Ord. No. 894, March 3, 2010, Ord. No. 1037, August 29, 2018, Ord. No. 1065, December 23, 2019 (accessed March 24, 2020)

Hawai'i County Code 1983 (2016 Edition, as Amended), Chapter 25 – Zoning, Article 4 – General Development Regulations, Division 5 – Off-Street Parking and Loading, 1996, Ord 96-160, sec 2, ratified April 6, 1999; including the following amendments within the section: am 2008, ord 08-155, sec 10; am 2012, ord 12-91, sec 3; am 2013, ord 13-95, sec 1; am 2014, ord 14-85, sec 2; am 2015, ord 15-44, sec 3.; am 2016, ord 16-98, sec 1.; am 2017, ord 17-31, sec 2. (accessed March 24, 2020)

Exhibit 3: Representative Commercial Development Types and Parking Requirements

	Commercial - shopping center					Commercial - large single user				
	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i
Location										
GLA or GBA¹	110,000	160,000	100,000	100,000	100,000	70,000	160,000	160,000	160,000	160,000
Story height	2	1	1	1	1	2	1	1	1	1
Parking	Garage	Surface	Surface	Surface	Surface	Podium	Surface	Surface	Surface	Surface
Code Standard 1 <i>(current applicable)</i>	ROH Chapter 21 Article 6	ROH Chapter 21 Article 6	Maui County Code Title 19 Article II Chapter 19.36B	Kaua'i County Code Title IV Chapter 8 Article 6	Hawai'i County Code Chapter 25 Article 4 Division 5	ROH Chapter 21 Article 6	ROH Chapter 21 Article 6	Maui County Code Title 19 Article II Chapter 19.36B	Kaua'i County Code Title IV Chapter 8 Article 6	Hawai'i County Code Chapter 25 Article 4 Division 5
Total spaces	367	534	334	334	334	234	534	534	534	534
Spaces/1000 SF	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Code Standard 2 <i>(TOD/mixed-use)</i>	ROH Chapter 21 Article 9-100²	ROH Chapter 21 Article 9-100²	Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use³	Kaua'i County Code Title IV Chapter 10 Article 5A⁴	N/A⁵	ROH Chapter 21 Article 9-100²	ROH Chapter 21 Article 9-100²	Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use³	Kaua'i County Code Title IV Chapter 10 Article 5A⁴	N/A⁵
Total spaces	0	0	334	250		0	0	534	400	
Spaces/1000 SF	0.0	0.0	3.3	2.5		0.0	0.0	3.3	2.5	
Code Standard 3 <i>(proposed changes)</i>	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	N/A	N/A	N/A	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	N/A	N/A	N/A
Total spaces	0	320				0	320			
Spaces/1000 SF	0.0	2.0				0.0	2.0			
Code Standard 4 <i>(special areas)</i>	HAR Title 15 Chapter 22 Section 67⁷	N/A	N/A	N/A	N/A⁸	HAR Title 15 Chapter 22 Section 67⁷	N/A	N/A	N/A	N/A⁸
Total spaces	248					158				
Spaces/1000 SF	2.3					0.0				

Exhibit 3: Representative Commercial Development Types and Parking Requirements

Location	Commercial - shopping center					Commercial - large single user				
	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i

Footnotes

- 1 County standards vary as to whether this applies to gross leasable area or gross building area. For these modeling purposes we applied to available data which may be building area or gross leasable area.
- 2 Transit-Oriented Development Special Districts. There are no minimum parking requirements for non-residential uses.
- 3 Service Business Residential Mixed-Use. The code provides for combined parking, but requirements are based on 2.0 spaces for each dwelling unit plus 1.0 space per 300 square feet of non-residential floor area.
- 4 Līhu'e Town Core Urban Design District. While this is not a direct Transit Oriented Development designation, the code allows for parking reductions if transit facilities are provided such that commercial uses require 1.0 space per 400 square feet of net floor area generally, or the Director may allow a reduction in requirement to 1.0 space per 550 square feet, if a bus or transit stop with a pullout area is provided and built to County Transportation Agency Standards.
- 5 There is no county-wide TOD code or mixed-use standard or guideline. The existing zoning code does provide exceptions to parking requirements within certain areas like downtown Hilo, Kainaliu Town and Pahoa Village, but those are not modeled here.
- 6 According to Bill 2 (2020) Council Draft 1, no offstreet parking is required in the Primary Urban Center Development Plan area and Ewa Development Plan area, except for those areas thereof located in the residential, agricultural, and preservation zoning districts. Additionally, no offstreet parking is required in any zoning district within one-half mile of an existing or future Honolulu rail transit station, as identified in the accepted environmental impact statement, or in the transit-oriented development special districts. The minimum off-street parking ratios identified below* apply to all other areas not identified above. In areas where no parking is required, any parking that is provided must meet design, dimensions, and other standards.
 The assumptions for Urban Honolulu examples are that the properties are within the Primary Urban Core or Ewa Development plans, are within one half mile of a current or future transit station, and are not zoned residential, agricultural, or preservation. This combination results in no parking minimum requirements.
 The assumptions for Other Honolulu examples are that the properties are within the Ewa Development Plan, are not within one half mile of a current or future transit station, and are zone residential. This combination would require parking minimums.
 *For properties that are zoned residential, agricultural, or preservation Bill 2 (2020) identifies 1.0 space per 800 square feet of private dwelling or lodging area. The January 2020 letter recommends merging Commercial 1 and 2 categories with the standard requirement of 1.0 space per 500 square feet. This analysis only addresses changes in spaces per square feet and does not account for other modifications proposed in Bill 2 (2020) such as setbacks, access points, unbundled parking, bike parking, etc. 2 (2020) such as setbacks, access points, unbundled parking, bike parking, etc.
- 7 HCDA Kaka'ako Ma uka Area Rules. Commercial uses at 1.0 space per 444 square feet.
- 8 Hawai'i County has Community Development Plans with unique design guidelines. For example, the Kona Community Development Plan (KCDP) includes Village Design Guidelines (VDGs) that may offer reduced parking standards pursuant to master plans approved in Traditional Neighborhood Design- and/or TOD-designated areas. However, to date no such master plans are known to have been approved by the Planning Department for such purposes, and there have been conflicts between the KCPD VDGs and County zoning codes.

Sources:

City and County of Honolulu's Revised Ordinances of Honolulu 1990 (ROH), Chapter 21 – Land Use Ordinance; Article 6 – Off-Street Parking and Loading, Added by Ordinance 99-12, Am. Ord. 03-38, 10-19, 15-41; Article 9 - Special District Regulations, 100 Transit-Oriented Development (TOD) Special Districts, -8 General Requirements and Development Standards. Added by Ordinance 09-4, Am. Ord. 17-54 (accessed March 24, 2020)

City and County of Honolulu's Design Guidelines: Transit-Oriented Development Special District, June 2018 (accessed March 24, 2020)

Hawai'i Administrative Rules (HAR), Title 15 – Department of Business Economic Development and Tourism, Hawai'i Community Development Authority, Chapter 22 – Mauka Area Rules Kaka'ako Community Development District, Section 67 – Off-street Parking, June 2005

Maui County Code, Title 19 – Zoning, Article II – Comprehensive Zoning Provisions, Chapter 19.36B – Off-Street Parking and Loading; Ord. No. 4921 § 2, 2018 (accessed March 24, 2020)

Kaua'i County Code, Title IV – County Planning and Land Development, Chapter 8 – Comprehensive Zoning Ordinance; Article 4 – Residential Districts (R), Section 8-4.5 Standards of Development Applicable to All Residential Development, (a) Access, Driveways and Off-Street Parking, Ord. No. 935, November 14, 2012, Ord. No. 1070, February 28, 2020; Article 6 – Commercial Districts (C), Section 8-6.3 Development Standards for Commercial Development, (e) Driveways and Parking Areas, Ord. No. 935, November 14, 2012; Article 10 - Special Development Plans, Section 5A - Līhu'e Town Core Urban Design District, Ord. No. 894, March 3, 2010, Ord. No. 1037, August 29, 2018, Ord. No. 1065, December 23, 2019 (accessed March 24, 2020)

Hawai'i County Code 1983 (2016 Edition, as Amended), Chapter 25 – Zoning, Article 4 – General Development Regulations, Division 5 – Off-Street Parking and Loading, 1996, Ord 96-160, sec 2, ratified April 6, 1999; including the following amendments within the section: am 2008, ord 08-155, sec 10; am 2012, ord 12-91, sec 3; am 2013, ord 13-95, sec 1; am 2014, ord 14-85, sec 2; am 2015, ord 15-44, sec 3.; am 2016, ord 16-98, sec 1.; am 2017, ord 17-31, sec 2. (accessed March 24, 2020)

Exhibit 4: Representative Direct Parking Costs per Codes: Residential Units

In 2020 1Q dollars

Location	High-rise rental		High-rise for-sale		Low-/mid-rise MF rental				Low-/mid-rise multifamily for-sale			
	Affordable	Mixed income	Mixed income	Market	Affordable	Affordable	Affordable	Affordable	Mixed income	Market	Market	Market
Parking type	Urban Honolulu	Urban Honolulu	Urban Honolulu	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Other O'ahu	Maui Island	Kaua'i	Hawai'i
	Podium	Podium	Podium	Podium	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Direct costs per space												
Construction	\$42,000	\$42,000	\$42,000	\$42,000	\$3,100	\$3,600	\$3,800	\$3,400	\$3,100	\$3,600	\$3,800	\$3,400
Land ¹	\$0	\$0	\$0	\$0	\$19,400	\$11,600	\$3,200	\$800	\$19,400	\$11,600	\$3,200	\$800
Total	\$42,000	\$42,000	\$42,000	\$42,000	\$22,500	\$15,200	\$7,000	\$4,200	\$22,500	\$15,200	\$7,000	\$4,200
Direct cost per home												
Code Standard 1 <i>(current applicable)</i>	ROH Chapter 21 Article 6	Maui County Code Title 19 Article II Chapter 19.36B	Kaua'i County Code Title IV Chapter 8 Article 4	Hawai'i County Code Chapter 25 Article 4 Division 5	ROH Chapter 21 Article 6	Maui County Code Title 19 Article II Chapter 19.36B	Kaua'i County Code Title IV Chapter 8 Article 4	Hawai'i County Code Chapter 25 Article 4 Division 5				
~Average spaces/home	1.3	1.3	1.7	1.8	1.6	2.0	2.0	1.3	2.0	2.0	2.0	1.3
Average cost per home	\$55,000	\$55,000	\$69,000	\$77,000	\$35,000	\$30,000	\$14,000	\$5,000	\$45,000	\$30,000	\$14,000	\$5,000
Code Standard 2 <i>(TOD/mixed-use)</i>	ROH Chapter 21 Article 9-100²	Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use³	Kaua'i County Code Title IV Chapter 10 Article 5A⁴	N/A⁵	ROH Chapter 21 Article 9-100²	Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use³	Kaua'i County Code Title IV Chapter 10 Article 5A⁴	N/A⁵				
~Average spaces/home	0.7	0.4	0.8	0.9	0.8	2.0	1.5		1.0	2.0	1.5	
Average cost per home	\$27,000	\$18,000	\$35,000	\$38,000	\$18,000	\$30,000	\$11,000		\$23,000	\$30,000	\$11,000	
Code Standard 3 <i>(proposed changes)</i>	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	N/A	N/A	N/A	City and County of Honolulu Bill 2 (2020)⁶	N/A	N/A	N/A
~Average spaces/home	0.0	0.0	0.0	0.0	1.0				1.4			
Average cost per home	\$0	\$0	\$0	\$0	\$23,000				\$32,000			
Code Standard 4 <i>(special areas)</i>	HAR Title 15 Chapter 22 Section 67⁷	N/A	N/A	N/A	N/A⁸	N/A	N/A	N/A	N/A⁸			
~Average spaces/home	1.0	1.0	1.2	1.3								
Average cost per home	\$44,000	\$43,000	\$50,000	\$53,000								

1 Average space estimated at 330 square feet per parking stall. RLB study found typical gross floor areas of about 360 (surface), and 320 to 330 (podium/garage) square feet per stall. However, podium parking is integrated in a building with residential or commercial uses, so the related land footprint is assumed to be effectively \$0.

2 Transit-Oriented Development Special Districts. There are no minimum parking requirements for non-residential uses. Minimum requirements for residential units includes: 0.0 spaces for units of 300 square feet or less; 0.5 spaces for units of 301 to 600 square feet; 0.75 spaces for units of 601 to 800 square feet; and 1.0 space for each unit over 800 square feet.

3 Service Business Residential Mixed-Use. The code provides for combined parking, but requirements are based on 2.0 spaces for each dwelling unit plus 1.0 space per 300 square feet of non-residential floor area.

4 Lihu'e Town Core Urban Design District. While this is not a Transit Oriented Development designation per se, multifamily dwellings require 1.5 spaces per unit generally, or the Director may allow a reduction in requirement to 1.0 space per dwelling unit if a bus or transit stop with a pullout area is provided and built to County Transportation Agency Standards.

5 There is no county-wide TOD code or mixed-use standard, but the existing zoning code provides exceptions within certain areas like downtown Hilo, Kainaliu Town and Pahoia Village. Those are not modeled here.

6 Standards analyzed are based on Bill 2 (2020) Council Draft 1, and Planning Commission recommendations according to the letter dated January 7, 2020. This allows no offstreet parking in the Primary Urban Center Development Plan and 'Ewa Development Plan areas, except in areas located in the residential, agricultural, and preservation zoning districts. Additionally, no offstreet parking is required in any zoning district within one-half mile of an existing or future Honolulu rail transit station. The minimum off-street parking ratios identified below* apply to other areas not identified above. In areas where no parking is required, any parking that is provided must meet the design, dimension, and other standards set forth in this chapter. Urban Honolulu examples assume the properties are within the Primary Urban Core, within one half mile of a current or future transit station, and are zoned apartment or BMX. This combination results in no parking minimum requirements. The Other Honolulu examples assume the properties are within the 'Ewa Development Plan, are not within one half mile of a current or future transit station, and are zoned residential. This combination would require parking minimums. *For properties zoned residential, agricultural, or preservation, the bill identifies 1.0 space per 800 square feet of dwelling or lodging area. The January 2020 letter recommends merging Commercial 1 and 2 categories with the standard requirement of 1.0 space per 500 square feet.

7 HCDA Kaka'ako Ma uka Area Rules. Multifamily dwelling units, including reserved housing units, at 0.9 spaces for units less than 600 square feet; 1.13 spaces for units of 600 to 800 square feet; 1.35 spaces for units more than 800 square feet. Detached dwellings and duplex units are 2.0 spaces per unit, plus 1 space per 1,000 square feet of floor area over 2,500 square feet.

8 Hawai'i County has Community Development Plans with unique design guidelines. For example, the Kona Community Development Plan (KCDP) includes Village Design Guidelines (VDGs) that may offer reduced parking standards pursuant to master plans approved in Traditional Neighborhood Design- and/or TOD-designated areas. However, to date no such master plans are known to have been approved by the Planning Department for such purposes, and there have been conflicts between the KCPD VDGs and County zoning codes.

Exhibit 5: Representative Direct Parking Costs per Codes: Commercial Facilities

In 2020 1Q dollars

Location	Commercial - shopping center					Commercial - large single user				
	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i	Urban Honolulu	Other O'ahu	Maui Island	Kaua'i	Hawai'i
Parking type	Garage	Surface	Surface	Surface	Surface	Podium (mixed use)	Surface	Surface	Surface	Surface
Direct costs per space										
Construction	\$42,000	\$5,400	\$6,200	\$6,500	\$5,900	\$42,000	\$5,400	\$6,200	\$6,500	\$5,900
Land ¹	\$15,000	\$20,000	\$17,000	\$7,000	\$7,000	\$0	\$15,000	\$24,000	\$7,000	\$8,000
Total	\$57,000	\$25,400	\$23,200	\$13,500	\$12,900	\$42,000	\$20,400	\$30,200	\$13,500	\$13,900
Parking cost per 1,000 SF GLA										
Code Standard 1 <i>(current applicable)</i>	ROH Chapter 21 Article 6	ROH Chapter 21 Article 6	Maui County Code Title 19 Article II Chapter 19.36B	Kaua'i County Code Title IV Chapter 8 Article 6	Hawai'i County Code Chapter 25 Article 4 Division 5	ROH Chapter 21 Article 6	ROH Chapter 21 Article 6	Maui County Code Title 19 Article II Chapter 19.36B	Kaua'i County Code Title IV Chapter 8 Article 6	Hawai'i County Code Chapter 25 Article 4 Division 5
~Parking spaces/1,000 SF	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Average cost/1,000 SF	\$190,000	\$85,000	\$77,000	\$45,000	\$43,000	\$140,000	\$68,000	\$101,000	\$45,000	\$46,000
Code Standard 2 <i>(TOD/mixed-use)</i>	ROH Chapter 21 Article 9-100²	ROH Chapter 21 Article 9-100²	Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use³	Kaua'i County Code Title IV Chapter 10 Article 5A⁴	N/A⁵	ROH Chapter 21 Article 9-100²	ROH Chapter 21 Article 9-100²	Maui County Code Title 19 Article II Chapter 19.36B - SBR Mixed Use³	Kaua'i County Code Title IV Chapter 10 Article 5A⁴	N/A⁵
~Parking spaces/1,000 SF	-	-	3.3	2.5		-	-	3.3	2.5	
Average cost/1,000 SF	\$0	\$0	\$77,000	\$34,000		\$0	\$0	\$101,000	\$34,000	
Code Standard 3 <i>(proposed changes)</i>	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	N/A	N/A	N/A	City and County of Honolulu Bill 2 (2020)⁶	City and County of Honolulu Bill 2 (2020)⁶	N/A	N/A	N/A
~Parking spaces/1,000 SF	-	2.0				-	2.0			
Average cost/1,000 SF	\$0	\$51,000				\$0	\$41,000			
Code Standard 4 <i>(special area - HCDA)</i>	HAR Title 15 Chapter 22 Section 67⁷	N/A	N/A	N/A	N/A⁸	HAR Title 15 Chapter 22 Section 67⁷	N/A	N/A	N/A	N/A⁸
~Parking spaces/1,000 SF	2.3					0.0				
Average cost/1,000 SF	\$129,000					\$0				

1 Average space estimated at 350 square feet per parking stall. RLB study found typical gross floor areas of about 330 (garage), 360 (surface), and 320 to 330 (podium/garage) square feet per stall. Podium parking is integrated to a building with residential or commercial uses, so the related land footprint is assumed to be effectively \$0.

2 Transit-Oriented Development Special Districts. There are no minimum parking requirements for non-residential uses. The minimum parking requirements for residential dwelling units is as follows: 0.0 spaces for each dwelling unit of 300 square feet or less; 0.5 spaces for each dwelling unit of between 301 and 600 square feet; 0.75 spaces for each dwelling unit between 601 and 800 square feet; and 1.0 space for each dwelling unit over 800 square feet.

3 Service Business Residential Mixed-Use. The code provides for combined parking, but requirements are based on 2.0 spaces for each dwelling unit plus 1.0 space per 300 square feet of non-residential floor area.

4 Lihue Town Core Urban Design District. While this is not a direct Transit Oriented Development designation, the code allows for parking reductions if transit facilities are provided such that commercial uses require 1.0 space per 400 square feet of net floor area generally, or the Director may allow a reduction in requirement to 1.0 space per 550 square feet, if a bus or transit stop with a pullout area is provided and built to County Transportation Agency Standards. Multifamily dwellings require 1.5 spaces per unit generally, or the Director may allow a reduction in requirement to 1.0 space per dwelling unit if a bus or transit stop with a pullout area is provided and built to County Transportation Agency Standards.

5 There is no county-wide TOD code or mixed-use standard or guideline. The existing zoning code does provide exceptions to parking requirements within certain areas like downtown Hilo, Kainaliu Town and Pahoa Village, but those are not modeled here.

6 Standards analyzed are based on Bill 2 (2020) and Planning Commission recommendations according to the letter dated January 7, 2020. Bill 2 (2020) identifies 1.0 space per 800 square feet of private dwelling or lodging area, and the January 2020 letter recommends merging Commercial 1 and 2 categories with the standard requirement of 1.0 space per 500 square feet. This analysis only addresses changes in spaces per square feet and does not account for other modifications proposed in Bill 2 (2020) such as setbacks, access points, unbundled parking, bike parking, etc.

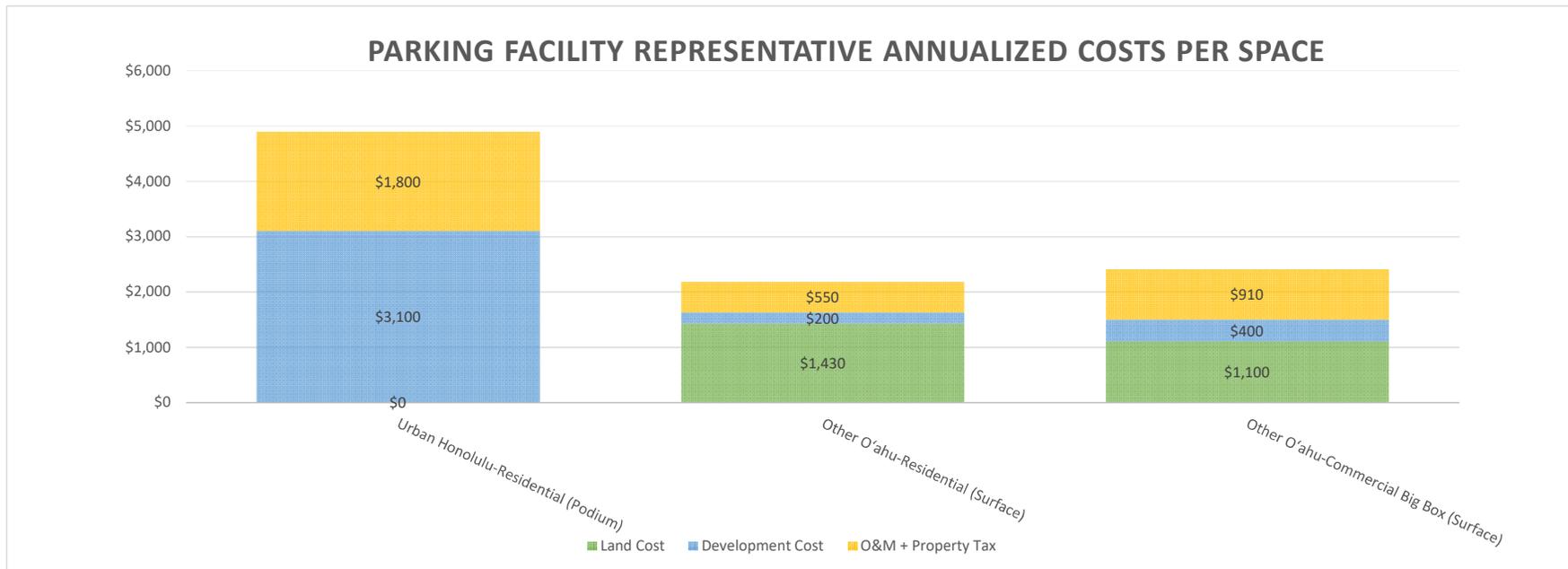
7 HCDA Kaka'ako Ma uka Area Rules. Commercial uses at 1.0 space per 444 square feet. Multifamily dwelling units, including reserved housing units, as follows: 0.9 spaces for each dwelling unit less than 600 square feet; 1.13 space for each dwelling unit of between 600 and 800 square feet; 1.35 spaces for each dwelling unit greater than 800 square feet. Detached dwellings and duplex units are 2.0 spaces per dwelling unit plus 1 space per 1,000 square feet of floor area over 2,500 square feet.

8 Hawai'i County provided for development of Community Development Plans which may have their own design guidelines. For example, the Kona Community Development Plan (KCDP) includes Village Design Guidelines (VDGs) that may offer reduced parking standards pursuant to master plans approved in Traditional Neighborhood Design- and/or Transit Oriented Development-designated areas. However, to date no such master plans are known to have been approved by the Planning Department for such purposes, and there appear to be conflicts between the KCPD VDGs and County zoning codes.

Exhibit 6: Representative Annualized Carrying Costs for Sample Parking Facilities

Per space, in 2020 1Q dollars

Type of Facility	Total Capital Cost	Land Cost	Annualized Land Cost	Construction Cost	Annualized Construction		Real Property Tax	Total Annual Cost	Total Monthly Cost
					Cost	O&M Cost			
Urban Honolulu-Residential (Podium)	\$42,000	\$0	\$0	\$42,000	\$3,100	\$1,800	\$0	\$4,900	\$410
Other O'ahu-Residential (Surface)	\$22,500	\$19,400	\$1,430	\$3,100	\$200	\$480	\$70	\$2,200	\$180
Other O'ahu-Commercial Big Box (Surface)	\$20,400	\$15,000	\$1,100	\$5,400	\$400	\$720	\$190	\$2,400	\$200



Note: Total and annualized costs are rounded. Annualization of land and development costs based on 4% interest carry and 20-year term. Actual carrying costs would be expected to be higher than what is shown because only a portion of development costs would be covered by debt and costs of equity would be higher than debt.

Exhibit 7: Representative Carrying Costs of Parking for Selected Household Profiles

In 2020 1Q dollars

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6
	Affordable apartment for-rent			Market/mixed income home for-sale		Commercial store
	High rise	High rise	Townhouse	High rise	Townhouse	
Household profile	Single person, mid-20s	Couple, seniors	Family	Family	Family	n/a
Household size	1	2	3	3	4	n/a
Unit type	Studio	1B	2B	2B	3B	Single-user
Unit size (sq. ft.)	400	600	750	1,000	1,200	160,000
Location	Urban Honolulu	Urban Honolulu	Other O'ahu	Urban Honolulu	Other O'ahu	Other O'ahu
Parking type	Podium	Podium	Surface	Podium	Surface	Surface
Costs per space						
Capital costs	\$42,000	\$42,000	\$22,500	\$42,000	\$22,500	\$20,400
Annual carry costs ¹	\$4,900	\$4,900	\$2,200	\$4,900	\$2,200	\$2,400
Monthly carry costs ¹	\$410	\$410	\$180	\$410	\$180	\$200
Required parking/unit ²						
Code Standard 1	ROH Chapter 21 Article 6 (currently applicable LUO)					
Number of spaces	1.0	1.0	1.5	2.0	2.0	534
Capital cost	\$42,000	\$42,000	\$33,800	\$84,000	\$45,000	\$10,900,000
Annual carry costs ¹	\$4,900	\$4,900	\$3,300	\$9,800	\$4,400	\$1,280,000
Monthly carry costs ¹	\$410	\$410	\$270	\$820	\$360	\$107,000
Code Standard 2	ROH Chapter 21 Article 9-100 (TOD/mixed-use)					
Number of spaces	0.5	0.5	0.8	1.0	1.0	0
Capital cost	\$21,000	\$21,000	\$16,900	\$42,000	\$22,500	\$0
Annual carry costs ¹	\$2,500	\$2,500	\$1,700	\$4,900	\$2,200	\$0
Monthly carry costs ¹	\$210	\$210	\$140	\$410	\$180	\$0
Code Standard 3	C&C Bill 2 (2020) (proposed changes to LUO)					
Number of spaces	0.0	0.0	0.9	0.0	1.5	320
Capital cost	\$0	\$0	\$21,100	\$0	\$33,800	\$6,528,000
Annual carry costs ¹	\$0	\$0	\$2,100	\$0	\$3,300	\$770,000
Monthly carry costs ¹	\$0	\$0	\$170	\$0	\$270	\$64,000
Code Standard 4	HAR Title 15 Chapter 22 Section 67 (HCDA-Kaka'ako rules)					
Number of spaces	0.9	0.9	n/a	1.4	n/a	n/a
Capital cost	\$37,800	\$37,800		\$56,700		
Annual carry costs ¹	\$4,400	\$4,400		\$6,600		
Monthly carry costs ¹	\$370	\$370		\$550		

¹ Conservative annualization of land, development, operating & maintenance and real property tax expenditures as shown in Exhibit 5. Actual carrying costs could be expected to be higher because only a portion of development costs would be covered by debt and costs of equity may be expected to be higher than debt.

***Appendix A: HUD Affordable Housing Rent
and Sales Price Guidelines by County***

Appendix A: HUD Affordable Housing Rent and Sales Price Guidelines by County

2020 HHFDC Guidelines

	C&C of Honolulu Median family income = \$101,600		Maui County Median family income = \$97,500		Kaua'i County Median family income = \$101,800		Hawai'i County Median family income = \$75,200	
	Low-range	High-range	Low-range	High-range	Low-range	High-range	Low-range	High-range
	Studio	3-BR	Studio	3-BR	Studio	3-BR	Studio	3-BR
Rents by AMI¹								
30% AMI	\$661	\$982	\$538	\$799	\$510	\$757	\$438	\$649
50% AMI	\$1,102	\$1,636	\$897	\$1,332	\$850	\$1,262	\$730	\$1,083
80% AMI	\$1,764	\$2,619	\$1,436	\$2,132	\$1,360	\$2,020	\$1,168	\$1,299
100% AMI	\$2,205	\$3,273	\$1,795	\$2,665	\$1,700	\$2,525	\$1,460	\$2,166
120% AMI	\$2,646	\$3,928	\$2,154	\$3,198	\$2,040	\$3,030	\$1,752	\$2,600
140% AMI	\$3,087	\$4,583	\$2,513	\$3,731	\$2,380	\$3,535	\$2,044	\$3,032
Sales prices by AMI²								
	2-pers household	4-pers household	2-pers household	4-pers household	2-pers household	4-pers household	2-pers household	4-pers household
80% AMI	\$414,900	\$518,200	\$337,500	\$421,900	\$319,800	\$399,600	\$274,500	\$342,800
100% AMI	\$518,600	\$647,700	\$421,900	\$527,300	\$399,700	\$499,500	\$343,100	\$428,600
120% AMI	\$622,300	\$777,300	\$506,200	\$632,800	\$479,700	\$599,500	\$411,800	\$514,300
140% AMI	\$726,000	\$906,800	\$590,600	\$738,300	\$559,600	\$699,400	\$480,400	\$600,000

[1] Inclusive of charges for water, sewer, electrical, and gas, where applicable. Note that area market rents could be lower than these guideline limits.

[2] Based on a 30-year fixed mortgage at 4.0% interest, with 5% down (assumes down payment funds are available to household). Maximum housing expense capped at 38% of gross family income, with expenses including mortgage principal and interest, real property taxes, homeowners' association fees and/or maintenance expenses, private mortgage insurance, homeowner's insurance and ground lease rent, if any.

Source: State of Hawai'i, Hawai'i Housing Finance & Development Corporation (HHFDC), available at: <http://dbedt.hawaii.gov/hhfdc/>