Electricity Burdens on Hawai'i Households


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Research and Economic Analysis Division

Department of Business, Economic Development and Tourism

STATE OF HAWAII

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This report was produced by the Research and Economic Analysis Division (READ) of the Department of Business, Economic Development & Tourism (DBEDT). It was prepared by Dr. Jie Bai, Economist, and Naomi Akamine, Economist, under the direction of Dr. Eugene Tian, the Economic Research Administrator.

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Executive Summary

Household electricity burden–the percentage of household income spent on electricity bills–is one of the key elements contributing to a household's energy insecurity, especially for low-income households.

Using the Low-Income Energy Affordability Data for 2018 compiled by the Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy (2020), this report provides the following facts:

- Monthly electricity cost of Hawai'i households was $153 on average and ranked the 5th highest in the nation in 2018. In the same year, Hawai'i's median household income was $80,212, the 4th highest in the nation. Electricity burden, calculated as the ratio between electricity cost and the household income, was 1.9% and ranked the 26th in the nation.
- Factors affecting electricity burden included household income, electricity price, house tenure, and building structure.
- The average renter households experienced an electricity burden greater than that of the average owner households (2.5% versus 1.6%).
- Households living in condos or apartments faced a slightly higher electricity burden than those living in single-family houses (2.0% versus 1.8%).
- Extremely low-income households had significantly heavier electricity burden in Hawai'i. Households earning less than 30% of Area Median Income (AMI) spent 11% of their income on electricity bills, almost five times higher than the average spending of overall Hawai'i households.
- More prominently, households below the Federal Poverty Level (FPL) spent 15.2% of their income on electricity costs, which was seven times higher than the average spending of overall Hawai'i households.
- Neighbor island counties have higher electricity cost and lower household income and thus higher electricity burdens. Among the counties, households in Kauai County had the largest electricity burden at 3.0%, followed by Hawai'i County at 2.9%, Maui County at 2.5%, and Honolulu County at 1.5%.

Introduction

Household electricity burden–the percentage of household income spent on electricity bills–is one of the key elements contributing to a household's energy insecurity. This report provides a snapshot of electricity burdens on Hawai'i households. We examine average monthly electricity costs and average household electricity burdens across all households and among subgroups to identify those that spend disproportionally more of their income on electricity bills. The analysis is across households with varying house tenure, building structure, and income level in the state of Hawai'i, at county and the census tract levels.

This report uses the U. S. Department of Energy's (DOE's) Low-Income Energy Affordability Data (LEAD) updated in 2018[1]. LEAD data comes primarily from the U.S. Census Bureau's American Community Survey 2018 Public Use Microdata Samples (5-Year Average, 2014-2018) and are calibrated to the U.S. Energy Information Administration's electric utility (Survey Form-861) and natural gas utility (Survey Form-176) data.

Using LEAD data, we calculate the average electricity burden as follows:

$$Average\ electricity\ burden = \frac{Average\ annual\ electricity\ cost}{Average\ annual\ household\ income} \times 100$$

We first determine the average annual electricity cost and average annual household income for each of the household subgroups, and then take the ratio between these two averages. Due to the lack of data necessary to calculate electricity burden, our analysis excludes the following households: 1) households without any reported income; 2) households in master metered apartment buildings where electricity costs are incorporated into monthly rent or in condo fee; 3) households who claim that no electricity is used or charged.

We recognize the global COVID-19 pandemic has greatly increased energy insecurity, especially among the vulnerable low-income households. While this report measures electricity burdens using 2018 data, we anticipate the pandemic leads to higher electricity burdens in 2020 and beyond.

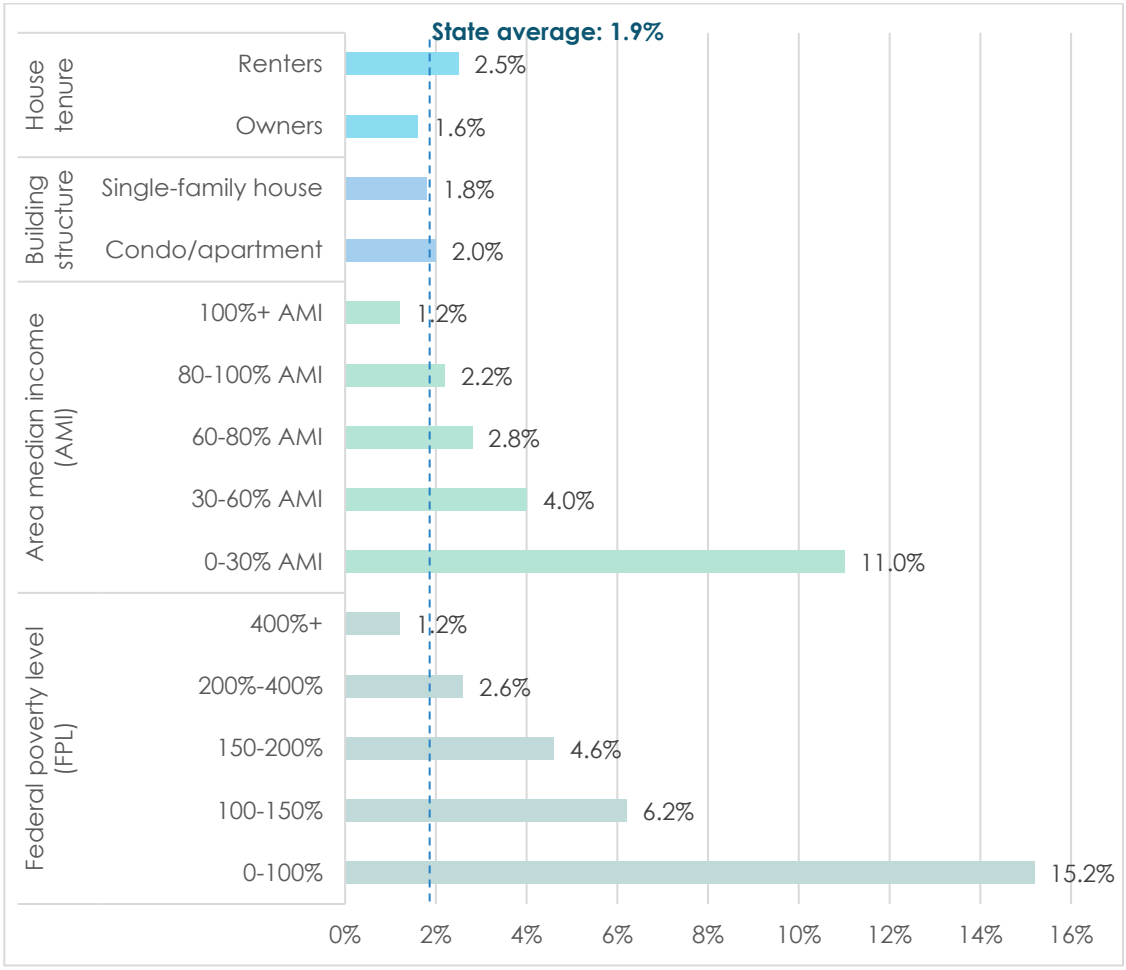
[1] U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update [data set]. Retrieved from https://dx.doi.org/10.25984/1784729.

Electricity Burdens in the State of Hawai'i

Electricity Burdens on Hawai'i Households

Hawai'i households spent an average of 1.9% of income on electricity bills. Figure 1 presents state average electricity burdens on Hawai'i households by subgroup.

Figure 1. Electricity burdens across subgroups of Hawai'i households by house tenure, building structure, and income levels compared to the state average electricity burden



Notes: Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

The following are the key findings:

- The average renter households experienced an electricity burden greater than that of the average owners (2.5% versus 1.6%).
- Households living in condos or apartments faced a slightly higher electricity burden than those living in single-family houses (2.0% versus 1.8%).

- Extremely low-income households had heavier burden. Households earning less than 30% of Area Median Income (AMI) spent 11% of their income on electricity bills, almost five times higher than the average spending of overall Hawai'i households.
- More prominently, households below the Federal Poverty Level (FPL) spent 15.2% of their income on electricity costs, which was seven times higher than the average spending of overall Hawai'i households.

Table 1 presents household income and monthly electricity cost for Hawai'i households by subgroup. Although renter households spent more of their income on electricity, their higher electricity burden results in part from lower income. The average monthly electricity cost of renter households was $140.7, compared with $161.3 of owner households. However, the average annual income of renter households was much lower than that of owner households ($67,074 versus $119,358).

Table 1. Average monthly electricity cost and electricity burden for Hawai'i households

Household Type		Housing count[1]	Average annual income	Average monthly electricity cost	Average electricity burden[2]
All households		456,782	$97,562	$152.7	1.9%
House tenure	Owners	266,362	$119,358	$161.3	1.6%
	Renters	190,420	$67,074	$140.7	2.5%
Building structure[3]	Single-family house	306,479	$111,749	$171.6	1.8%
	Condo/apartment	149,571	$68,692	$114.3	2.0%
Area median income (AMI)	100%+ AMI	192,244	$165,788	$171.1	1.2%
	80-100% AMI	52,456	$85,093	$153.5	2.2%
	60-80% AMI	57,689	$64,242	$148.8	2.8%
	30-60% AMI	86,147	$41,403	$138.2	4.0%
	0-30% AMI	68,245	$13,364	$123.0	11.0%
Federal poverty level (FPL)	400%+	198,657	$157,120	$156.6	1.2%
	200%-400%	142,464	$74,514	$158.5	2.6%
	150-200%	34,817	$39,213	$149.7	4.6%
	100-150%	32,522	$27,020	$140.6	6.2%
	0-100%	48,321	$10,178	$129.2	15.2%

1. The sums of housing units of some subgroups are not necessarily equal to total housing units due to rounding.
2. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
3. A small number of other building structures, including mobile homes, trailers, boats, RVs, vans, etc., are excluded from this table.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Households living in condos or apartments spent an average of $114.3 on electricity bills per month, much lower than the $171.6 spent by households living in single-family houses. This is not surprising due to the fact that single-family houses are often bigger in size and have larger square footage than condos and apartments. But some single-family houses could offset their electricity costs partly by using solar power, thus bringing down the average electricity costs of all single-family houses. According to the 2018 LEAD data, 4.8% of households living single-family house claimed solar energy as their primary heating fuel, compared with only 0.6% of those living in condos or apartments.

In general, electricity costs increase with income levels, either measured by AMI or FPL. However, electricity burdens consistently decrease with income; households with lower income level tend to spend a higher proportion of their income on electricity bills. The next subsection looks at households below the Federal Poverty Guideline in more details.

Electricity Burdens on Hawai'i Households Below the Federal Poverty Level

Table 2 shows the average electricity costs and electricity burdens for households who live below the Federal Poverty Guideline by house tenure and building structure. Contrary to the state overall patterns, owner households below FPL or those living in single-family houses below FPL experienced higher electricity burdens. Among households below FPL, owners spent up to 19% of their income on electricity, compared with 13.5% for the renters. Households living in single-family houses spent 17.1% of their income on electricity, versus 12.5% of those living in condos or apartments.

Table 2. Average monthly electricity cost and electricity burden for households below the Federal poverty level

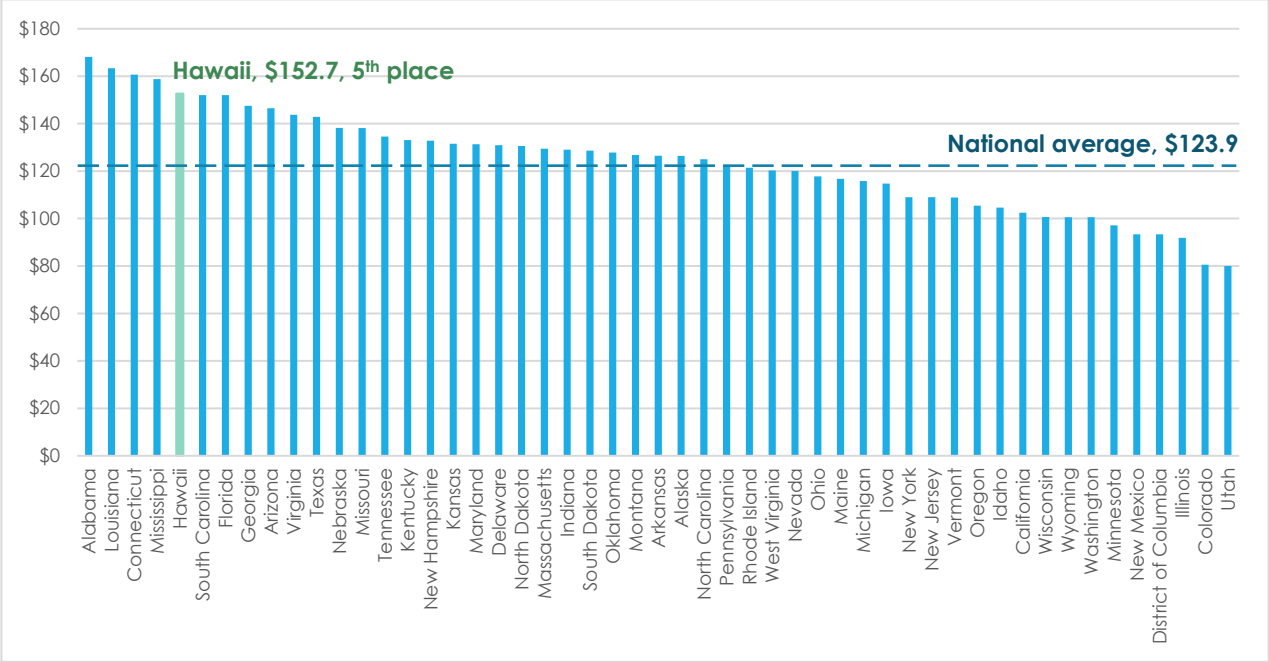
Household Type		Housing count	Average annual income	Average monthly electricity cost	Average electricity burden[1]
All households below the Federal poverty level		48,321	$10,178	$129.2	15.2%
House tenure	Owners	16,174	$9,508	$150.9	19.0%
	Renters	32,147	$10,515	$118.4	13.5%
Building structure[2]	Single-family house	25,259	$11,391	$162.7	17.1%
	Condo/apartment	22,920	$8,891	$92.7	12.5%

1. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
2. A small number of other building structures, including mobile homes, trailers, boats, RVs, vans, etc., are excluded from this table.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Hawai'i's Electricity Burdens Compared with the Nation and Other States

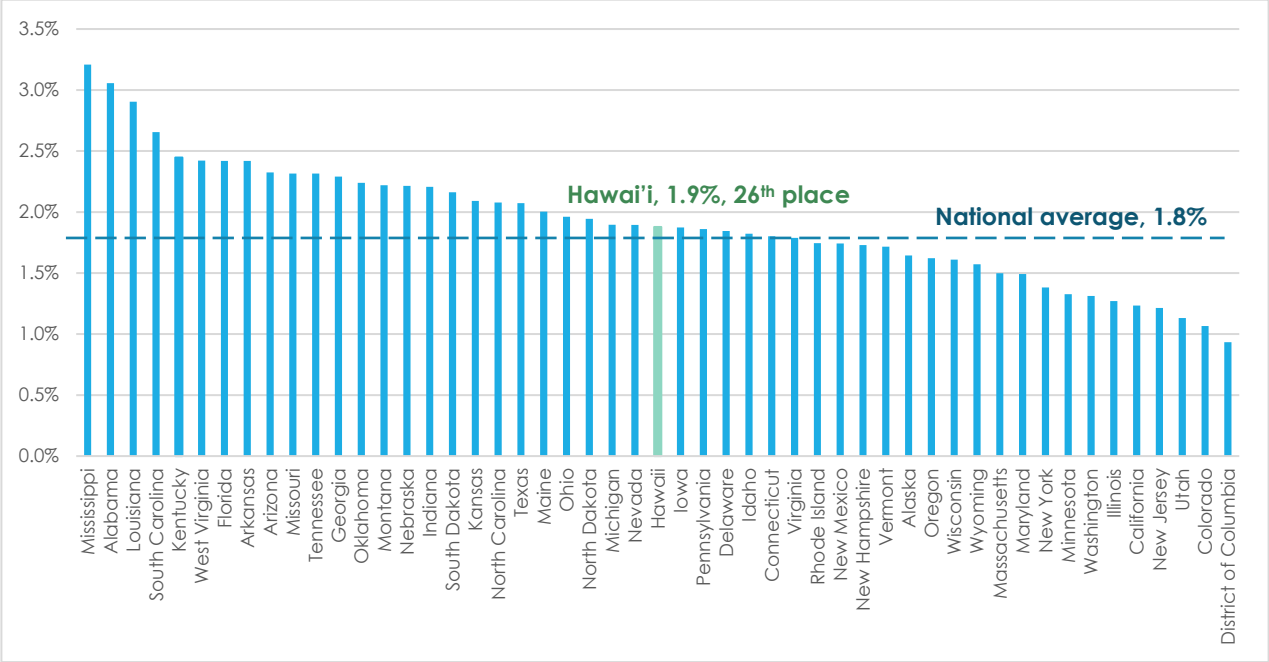
When compared with the nation as a whole and with other states, Hawai'i households paid much more for electricity. While the national average of monthly electricity cost was only about $124, Hawai'i households spent an average of $153 on electricity per month, 23.2% more than the national average. According to the 2018 LEAD data, Hawai'i ranked the 5th place among all U.S. states in terms of monthly electricity costs (Table 3). When household income is taken into consideration, however, Hawai'i households' electricity burdens were not necessarily in the top tier. Hawai'i households spent 1.9% of their income on electricity bills, only slightly above the national average of 1.8%, which ranked Hawai'i 26th among all the states (Table 4). Hawai'i's median household income was $80,212 in 2018, ranked the 4th place among all the states in the nation.

Figure 2. State ranking of average monthly electricity cost



Notes: Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Figure 3. State ranking of average electricity burden



Notes: Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Table 3 and Table 4 show electricity burdens by house tenure for the nation as well as all the states. Hawai'i owners spent $161 on electricity cost per month, 15% higher than the national average at $140. On the other hand, Hawai'i renters spent $141 on electricity per month, 48% higher than the national average at $95, making Hawai'i the second expensive state in terms of electricity costs for renters. When looking at electricity burdens, Hawai'i owner households, ranking 35th among all the states, spent 1.6% of their income on electricity bills, 0.1 percentage points lower than the national level. The average electricity burden on Hawai'i renters was 2.5%, 0.2 percentage points higher than the national average, which ranked 27th among all states.

Table 3. State ranking of average monthly electricity cost

State	All households		Owners		Renters	
	Electricity cost	Rank	Electricity cost	Rank	Electricity cost	Rank
Alabama	$168.1	1	$180.4	2	$141.4	1
Alaska	$126.4	27	$150.6	16	$83.3	33
Arizona	$146.5	9	$159.3	11	$124.0	8
Arkansas	$126.5	26	$139.4	28	$101.8	21
California	$102.5	42	$124.9	40	$75.4	42
Colorado	$80.5	50	$93.0	50	$57.5	50
Connecticut	$160.6	3	$180.7	1	$121.1	9
Delaware	$130.9	19	$142.7	25	$102.1	20
District of Columbia	$93.4	48	$111.6	47	$80.2	36
Florida	$152.0	7	$165.1	5	$127.7	5
Georgia	$147.5	8	$160.5	10	$125.2	7
Hawaii	**$152.7**	**5**	**$161.3**	**9**	**$140.7**	**2**
Idaho	$104.6	41	$114.2	43	$83.0	34
Illinois	$91.9	49	$104.2	48	$67.9	48
Indiana	$129.0	22	$141.4	26	$101.6	22
Iowa	$114.7	36	$129.6	36	$78.0	40
Kansas	$131.5	17	$145.1	22	$104.8	18
Kentucky	$133.1	15	$146.9	20	$105.2	17
Louisiana	$163.3	2	$176.7	3	$138.3	3
Maine	$116.8	34	$132.7	32	$75.5	41
Maryland	$131.3	18	$148.0	19	$97.8	24
Massachusetts	$129.5	21	$156.3	13	$85.1	30
Michigan	$115.8	35	$128.6	37	$84.5	32
Minnesota	$97.2	46	$114.0	44	$54.8	51
Mississippi	$158.8	4	$169.5	4	$135.8	4
Missouri	$138.1	13	$149.2	18	$115.7	11
Montana	$126.8	25	$143.9	24	$90.8	25
Nebraska	$138.2	12	$151.6	15	$112.1	13
Nevada	$120.1	32	$130.6	34	$106.7	15
New Hampshire	$132.8	16	$153.9	14	$81.2	35
New Jersey	$109.0	38	$130.2	35	$71.4	43
New Mexico	$93.4	47	$104.0	49	$71.3	44
New York	$109.0	37	$134.6	31	$79.1	38
North Carolina	$125.0	28	$135.4	30	$105.6	16
North Dakota	$130.6	20	$161.5	8	$78.7	39
Ohio	$117.7	33	$132.5	33	$89.1	27
Oklahoma	$127.8	24	$140.1	27	$104.5	19
Oregon	$105.4	40	$115.3	42	$89.3	26
Pennsylvania	$122.6	29	$137.6	29	$89.1	28
Rhode Island	$121.4	30	$144.9	23	$85.6	29
South Carolina	$152.0	6	$163.3	6	$127.0	6
South Dakota	$128.6	23	$149.2	17	$84.5	31
Tennessee	$134.6	14	$145.2	21	$113.6	12
Texas	$142.9	11	$162.5	7	$110.9	14
Utah	$80.0	51	$89.2	51	$58.6	49
Vermont	$108.9	39	$125.7	39	$68.3	47
Virginia	$143.7	10	$157.7	12	$116.5	10
Washington	$100.5	45	$112.9	46	$79.7	37
West Virginia	$120.2	31	$128.1	38	$98.9	23
Wisconsin	$100.7	43	$116.3	41	$69.0	46
Wyoming	$100.6	44	$114.0	45	$70.2	45
United States	**$123.9**	**-**	**$140.1**	**-**	**$95.2**	**-**

Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Table 4. State ranking of average electricity burden

State	All households		Owners		Renters	
	Electricity burden	Rank	Electricity burden	Rank	Electricity burden	Rank
Alabama	3.1%	2	2.7%	2	4.6%	2
Alaska	1.6%	37	1.6%	33	1.7%	42
Arizona	2.3%	9	2.1%	9	3.0%	15
Arkansas	2.4%	8	2.2%	8	3.3%	9
California	1.2%	47	1.2%	47	1.4%	49
Colorado	1.1%	50	1.0%	50	1.3%	50
Connecticut	1.8%	31	1.6%	36	2.8%	18
Delaware	1.8%	29	1.7%	27	2.5%	28
District of Columbia	0.9%	51	0.8%	51	1.2%	51
Florida	2.4%	7	2.2%	7	3.1%	14
Georgia	2.3%	12	2.0%	14	3.2%	10
Hawaii	**1.9%**	**26**	**1.6%**	**35**	**2.5%**	**27**
Idaho	1.8%	30	1.7%	28	2.5%	25
Illinois	1.3%	46	1.2%	46	1.7%	43
Indiana	2.2%	16	2.0%	16	3.2%	12
Iowa	1.9%	27	1.8%	24	2.4%	30
Kansas	2.1%	18	1.9%	21	3.0%	16
Kentucky	2.4%	5	2.2%	6	3.4%	6
Louisiana	2.9%	3	2.5%	3	4.4%	3
Maine	2.0%	21	1.9%	20	2.6%	22
Maryland	1.5%	42	1.4%	42	1.9%	39
Massachusetts	1.5%	41	1.4%	41	1.8%	41
Michigan	1.9%	24	1.8%	25	2.6%	24
Minnesota	1.3%	44	1.3%	44	1.5%	46
Mississippi	3.2%	1	2.9%	1	4.6%	1
Missouri	2.3%	10	2.1%	12	3.4%	7
Montana	2.2%	14	2.1%	10	2.7%	21
Nebraska	2.2%	15	2.0%	17	3.2%	11
Nevada	1.9%	25	1.6%	31	2.5%	29
New Hampshire	1.7%	35	1.7%	29	2.1%	35
New Jersey	1.2%	48	1.2%	48	1.4%	47
New Mexico	1.7%	34	1.6%	34	2.2%	34
New York	1.4%	43	1.3%	43	1.5%	45
North Carolina	2.1%	19	1.8%	22	2.9%	17
North Dakota	1.9%	23	1.9%	18	2.1%	36
Ohio	2.0%	22	1.8%	23	2.7%	20
Oklahoma	2.2%	13	2.0%	15	3.1%	13
Oregon	1.6%	38	1.4%	40	2.2%	33
Pennsylvania	1.9%	28	1.7%	26	2.5%	26
Rhode Island	1.7%	33	1.6%	37	2.3%	32
South Carolina	2.7%	4	2.4%	4	3.7%	4
South Dakota	2.2%	17	2.0%	13	2.8%	19
Tennessee	2.3%	11	2.1%	11	3.4%	8
Texas	2.1%	20	1.9%	19	2.6%	23
Utah	1.1%	49	1.1%	49	1.4%	48
Vermont	1.7%	36	1.7%	30	2.0%	38
Virginia	1.8%	32	1.6%	32	2.4%	31
Washington	1.3%	45	1.2%	45	1.6%	44
West Virginia	2.4%	6	2.2%	5	3.5%	5
Wisconsin	1.6%	39	1.5%	38	2.0%	37
Wyoming	1.6%	40	1.5%	39	1.8%	40
United States	**1.8%**	**-**	**1.7%**	**-**	**2.3%**	**-**

Notes: Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Electricity Burdens by County

Table 5 through Table 8 show the average electricity costs and electricity burdens for each of four Hawai'i counties. The state patterns of electricity burdens consistently hold true across counties: renters or households living in condos or apartments faced higher electricity burdens than owners or those living in single-family houses; and similarly at the state level, these patterns reversed for households with income below Federal Poverty Guideline. In addition, electricity burdens increasingly rose for households earning less income. We look at each county in details.

Table 5. Average monthly electricity cost and electricity burden: Honolulu County

Household Type		Housing count[1]	Average annual income	Average monthly electricity cost	Average electricity burden[2]
All households		311,525	$102,561	$130.8	1.5%
House tenure	Owners	173,697	$129,087	$139.2	1.3%
	Renters	137,828	$69,131	$120.3	2.1%
Building structure[3]	Single-family house	187,481	$124,425	$150.1	1.4%
	Condo/apartment	123,653	$69,597	$101.8	1.8%
Area median income (AMI)	100%+ AMI	124,235	$178,038	$145.9	1.0%
	80-100% AMI	37,256	$92,392	$135.5	1.8%
	60-80% AMI	41,400	$69,202	$129.0	2.2%
	30-60% AMI	62,822	$44,816	$120.8	3.2%
	0-30% AMI	45,812	$14,315	$103.3	8.7%
Federal poverty level (FPL)	400%+	143,992	$159,094	$135.8	1.0%
	200%-400%	95,861	$76,252	$137.3	2.2%
	150-200%	22,805	$39,320	$121.8	3.7%
	100-150%	19,597	$27,677	$113.2	4.9%
	0-100%	29,269	$10,018	$103.8	12.4%
All households below the Federal poverty level					
House tenure	Owners	7,687	$8,867	$117.0	15.8%
	Renters	21,582	$10,428	$99.1	11.4%
Building structure[3]	Single-family house	10,653	$12,217	$137.3	13.5%
	Condo/apartment	18,521	$8,799	$84.8	11.6%

1. The sums of housing units of some subgroups are not necessarily equal to total housing units due to rounding.
2. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
3. A small number of other building structures, including mobile homes, trailers, boats, RVs, vans, etc., are excluded from this table.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Households in Honolulu County spent an average of 1.5% of their income on electricity bills, 0.4 percentage points lower than the state average at 1.9%. The electricity burdens were 2.1% for renters, 1.8% for households living in condos or apartments, 8.7% for households earning below 30% of AMI, and 12.4% for households with income below FPL in Honolulu County. Owner households below FPL in Honolulu spent as much as 15.8% of their income on electricity costs, compared with renters below FPL spending 11.4%. Households living in

single-family houses spent up to 13.5% of their income on electricity bills, while those living in condos or apartments spent 11.6%.

Households in Hawai'i County spent an average of 2.9% of their income on electricity bills, one percentage point higher than the state average at 1.9%. The electricity burdens were 4.1% for renters, 3.6% for households living in condos or apartments, 17.3% for households earning below 30% of AMI, and 18.4% for households with income below FPL in Hawai'i County. Owner households below FPL in Hawai'i County spent as much as 19% of their income on electricity costs, compared with renters below FPL spending 17.9%. Households living in single-family houses spent up to 18.8% of their income on electricity bills, while those living in condos or apartments spent 16.3%.

Table 6. Average monthly electricity cost and electricity burden: Hawai'i County

Household Type		Housing count[1]	Average annual income	Average monthly electricity cost	Average electricity burden[2]
All households		68,412	$77,407	$188.6	2.9%
House tenure	Owners	45,767	$88,474	$188.5	2.6%
	Renters	22,645	$55,040	$188.9	4.1%
Building structure[3]	Single-family house	59,212	$81,423	$193.6	2.9%
	Condo/apartment	9,032	$51,726	$157.2	3.6%
Area median income (AMI)	100%+ AMI	31,109	$132,206	$208.7	1.9%
	80-100% AMI	6,693	$60,991	$181.9	3.6%
	60-80% AMI	7,264	$46,220	$192.3	5.0%
	30-60% AMI	11,045	$28,707	$172.6	7.2%
	0-30% AMI	12,300	$10,684	$154.3	17.3%
Federal poverty level (FPL)	400%+	22,582	$147,394	$205.7	1.7%
	200%-400%	21,475	$66,880	$188.1	3.4%
	150-200%	6,167	$38,556	$199.1	6.2%
	100-150%	6,895	$25,702	$175.8	8.2%
	0-100%	11,293	$10,262	$157.5	18.4%
All households below the Federal poverty level					
House tenure	Owners	5,237	$10,091	$159.8	19.0%
	Renters	6,056	$10,409	$155.5	17.9%
Building structure[3]	Single-family house	9,296	$10,570	$165.2	18.8%
	Condo/apartment	1,966	$8,870	$120.7	16.3%

1. The sums of housing units of some subgroups are not necessarily equal to total housing units due to rounding.
2. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
3. A small number of other building structures, including mobile homes, trailers, boats, RVs, vans, etc., are excluded from this table.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Households in Maui County spent an average of 2.5% of their income on electricity bills, 0.6 percentage points higher than the state average at 1.9%. The electricity burdens were 3.4% for renters, 2.9% for households living in condos or apartments, 15.9% for households earning below 30% of AMI, and 19.5% for households with income below FPL in Maui County. Owner households below FPL in Maui County spent almost a quarter of their income on electricity costs, compared with renters below FPL spending 16.2%. Households living in single-family houses spent up to 21.5% of their income on electricity bills, while those living in condos or apartments spent 15.2%.

Table 7. Average monthly electricity cost and electricity burden: Maui County

Household Type		Housing count	Average annual income	Average monthly electricity cost	Average electricity burden[1]
All households		54,321	$96,271	$198.2	2.5%
House tenure	Owners	32,687	$116,018	$205.5	2.1%
	Renters	21,634	$66,435	$187.1	3.4%
Building structure[2]	Single-family house	40,538	$104,191	$205.3	2.4%
	Condo/apartment	13,628	$72,672	$178.0	2.9%
Area median income (AMI)	100%+ AMI	25,442	$156,471	$212.0	1.6%
	80-100% AMI	6,343	$72,491	$198.8	3.3%
	60-80% AMI	6,677	$57,186	$194.4	4.1%
	30-60% AMI	8,801	$36,214	$187.6	6.2%
	0-30% AMI	7,058	$12,416	$164.0	15.9%
Federal poverty level (FPL)	400%+	22,647	$157,077	$205.0	1.6%
	200%-400%	18,026	$74,314	$202.3	3.3%
	150-200%	4,157	$39,699	$194.4	5.9%
	100-150%	4,218	$26,498	$180.5	8.2%
	0-100%	5,273	$10,582	$172.1	19.5%
All households below the Federal poverty level					
House tenure	Owners	2,107	$10,176	$210.1	24.8%
	Renters	3,166	$10,852	$146.9	16.2%
Building structure[2]	Single-family house	3,404	$11,254	$201.4	21.5%
	Condo/apartment	1,858	$9,413	$119.3	15.2%

1. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
2. A small number of other building structures, including mobile homes, trailers, boats, RVs, vans, etc., are excluded from this table.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Households in Kauai County spent an average of 3% of their income on electricity bills, 1.1 percentage points higher than the state average at 1.9% and the highest among all four counties. The electricity burdens were 4% for renters, 3.7% for households living in condos or apartments, 19.6% for households earning below 30% of AMI, and 23.3% for households with income below FPL in Kauai County. Owner households below FPL in Kauai County spent as high as 27.7% of their income on electricity costs, compared with renters below FPL spending one fifth. Households living in single-family houses spent almost a quarter of their income on electricity bills, while those living in condos or apartments spent 19.5%.

Table 8. Average monthly electricity cost and electricity burden: Kauai County

Household Type		Housing count[1]	Average annual income	Average monthly electricity cost	Average electricity burden[2]
All households		22,524	$92,752	$235.7	3.0%
House tenure	Owners	14,211	$107,585	$241.1	2.7%
	Renters	8,313	$67,396	$226.6	4.0%
Building structure[3]	Single-family house	19,247	$97,495	$241.7	3.0%
	Condo/apartment	3,258	$64,711	$201.1	3.7%
Area median income (AMI)	100%+ AMI	11,458	$144,829	$250.8	2.1%
	80-100% AMI	2,164	$70,923	$241.5	4.1%
	60-80% AMI	2,348	$52,616	$232.6	5.3%
	30-60% AMI	3,480	$33,208	$219.5	7.9%
	0-30% AMI	3,074	$12,074	$197.2	19.6%
Federal poverty level (FPL)	400%+	9,436	$150,384	$240.6	1.9%
	200%-400%	7,101	$74,644	$244.6	3.9%
	150-200%	1,688	$38,976	$236.5	7.3%
	100-150%	1,812	$26,143	$210.7	9.7%
	0-100%	2,487	$10,827	$210.0	23.3%
All households below the Federal poverty level					
House tenure	Owners	1,142	$9,917	$229.3	27.7%
	Renters	1,344	$11,600	$193.6	20.0%
Building structure[3]	Single-family house	1,906	$11,018	$223.3	24.3%
	Condo/apartment	575	$10,264	$166.7	19.5%

1. The sums of housing units of some subgroups are not necessarily equal to total housing units due to rounding.
2. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
3. A small number of other building structures, including mobile homes, trailers, boats, RVs, vans, etc., are excluded from this table.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Electricity Burdens by Census Tract

To verify the state patterns of electricity burdens, Table 9 and Table 10 compare households between top 20 census tracts with highest electricity burdens and 20 census tracts with lowest electricity burdens. In census tracts with highest electricity burdens, 40.4% of households were renter, 25.3% lived in condos or apartments, and 20.6% were below the Federal Poverty Guideline. By contrast, in census tracts with lowest electricity burdens 21.3% of households were renters, 17.1% lived in condos or apartments, and only 4% were below the Federal Poverty Guideline. Although we cannot make causal arguments about why some households tend to face higher electricity burdens, the 2018 LEAD data suggests that households' electricity burdens correlate with house tenure, building structure, and household income levels. Appendix provides a complete list of electricity burdens for Hawai'i census tracts, as well as visual representations of electricity burdens across the state.

Table 9. 20 census tracts with highest electricity burdens

Census tract	Census tract name	County	Average electricity burden[1]	Average household income	Ratio of renter households	Ratio of households living in condo/apt.	Ratio of households below 100% FPL
318.01	West Moloka'i	Maui	6.2%	$53,613	37.1%	10.0%	30.7%
401.04	Ha'ena-Hanalei	Kauai	5.9%	$64,692	53.1%	7.4%	12.9%
212.02	Ka'u	Hawaii	4.7%	$47,610	23.4%	1.8%	35.0%
307.10	Keawakapu	Maui	4.7%	$80,852	42.0%	49.5%	9.0%
406.03	Koloa-Po'ipu	Kauai	4.3%	$93,483	42.5%	27.2%	10.6%
401.03	Princeville-Kilauea	Kauai	4.2%	$98,624	26.2%	17.0%	10.8%
97.01	Waianae Kai	Honolulu	4.1%	$49,329	68.6%	51.4%	37.3%
211.06	Pahoa	Hawaii	4.1%	$54,480	30.5%	2.1%	21.2%
211.01	Kalapana-Kapoho	Hawaii	4.1%	$51,930	17.9%	1.9%	29.5%
205	Hilo: University-Houselots	Hawaii	4.0%	$44,821	78.0%	41.1%	30.4%
210.11	Volcano-Mt. View	Hawaii	4.0%	$56,081	25.9%	1.2%	16.1%
62.02	Linapuni Street	Honolulu	4.0%	$39,510	98.8%	90.4%	41.5%
317	East Moloka'i	Maui	4.0%	$63,375	30.4%	12.8%	22.2%
221.02	North Hilo	Hawaii	3.9%	$60,925	19.7%	2.7%	14.2%
315.01	Kapalua	Maui	3.9%	$105,947	43.3%	32.5%	6.9%
86.10	Ko Olina Resort	Honolulu	3.9%	$113,964	54.8%	58.4%	2.3%
315.03	Honokowai	Maui	3.9%	$91,156	60.3%	71.1%	5.4%
217.04	Kawaihae-Waikoloa	Hawaii	3.9%	$94,426	29.2%	29.4%	8.7%
307.09	Kamaole	Maui	3.8%	$83,073	48.4%	61.9%	11.0%
204	Hilo: Villa Franca-Kaiko'o	Hawaii	3.6%	$54,219	63.0%	32.5%	30.0%
	Weighted average		**4.1%**	**$67,885**	**40.4%**	**25.3%**	**20.6%**

1. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
Notes: a few census tracts are excluded from the top 20 list due to small sample size.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Table 10. 20 census tracts with lowest electricity burdens

Census tract	Census tract name	County	Average electricity burden[1]	Average household income	Ratio of renter households	Ratio of households living in condo/apt.	Ratio of households below 100% FPL
89.17	Mililani Town Center	Honolulu	1.1%	$131,991	23.6%	11.9%	4.3%
3.02	Wailupe	Honolulu	1.1%	$160,403	12.1%	1.2%	1.0%
89.24	Royal Kunia	Honolulu	1.1%	$135,865	10.2%	0.6%	3.3%
1.10	Kalama Valley	Honolulu	1.0%	$162,561	7.8%	1.3%	3.8%
110	Maunawili	Honolulu	1.0%	$163,449	15.4%	2.3%	1.9%
42	Queen Emma Gardens	Honolulu	1.0%	$107,106	48.5%	96.7%	12.0%
45	Dowsett Highlands	Honolulu	1.0%	$133,936	39.6%	40.7%	2.9%
78.09	Newtown	Honolulu	1.0%	$133,707	11.7%	14.7%	0.9%
1.07	Kuapa Isle	Honolulu	1.0%	$167,125	17.3%	12.0%	2.7%
29	East Manoa	Honolulu	1.0%	$129,149	53.3%	42.8%	3.4%
78.10	Royal Summit	Honolulu	1.0%	$138,344	14.0%	13.4%	2.4%
89.30	Mililani: Ainamakua Drive	Honolulu	1.0%	$147,399	20.9%	4.2%	1.4%
3.01	Aina Haina-Hawaii Loa Ridge	Honolulu	1.0%	$169,123	11.4%	1.2%	7.3%
6	Diamond Head	Honolulu	1.0%	$166,508	21.8%	2.1%	5.8%
30	Judd Hillside-Lowrey Avenue	Honolulu	1.0%	$144,826	34.1%	11.6%	4.5%
89.28	Mililani Mauka Middle School	Honolulu	1.0%	$144,011	11.3%	2.0%	1.4%
33	Makiki Heights	Honolulu	1.0%	$149,079	12.4%	2.6%	6.2%
4.01	Waialae Nui Ridge-Ainakoa	Honolulu	0.9%	$156,736	16.8%	3.8%	5.3%
4.02	Waialae Iki	Honolulu	0.9%	$199,022	4.4%	1.2%	2.5%
89.31	Waiawa	Honolulu	0.9%	$166,619	10.6%	0.6%	6.3%
	Weighted average		**1.0%**	**$146,945**	**21.3%**	**17.1%**	**4.0%**

1. Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
Notes: a few census tracts are excluded from the bottom 20 list due to small sample size.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Appendix: A Complete List of Electricity Burdens for Hawai'i Census Tracts

Table A - 1. Average monthly electricity cost and electricity burden by census tract

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Hawaii	201	Pauka'a-Wailea	1632	$188.8	3.4%
Hawaii	202.02	Hilo: Upper Waiakea Forest Reserve	649	$160.4	3.0%
Hawaii	203	Hilo: Pu'u'eo-Downtown	1667	$136.1	3.0%
Hawaii	204	Hilo: Villa Franca-Kaiko'o	1303	$163.2	3.6%
Hawaii	205	Hilo: University-Houselots	2260	$150.9	4.0%
Hawaii	206	Hilo: Keaukaha-Pana'ewa	1856	$179.4	3.1%
Hawaii	207.01	Hilo: Puainako	1856	$151.9	2.7%
Hawaii	207.02	Hilo: Kawailani	1712	$169.5	2.3%
Hawaii	208.01	Hilo: Kahuku-Kaumana	1576	$166.9	1.9%
Hawaii	208.02	Hilo: Piihonua-Kaumana	2331	$171.8	2.3%
Hawaii	209	Hilo: Haihai	1690	$171.2	2.2%
Hawaii	210.03	Orchidland-Ainaloa	2444	$161.7	3.6%
Hawaii	210.05	Hawaiian Paradise Park	3785	$181.6	3.0%
Hawaii	210.10	Upper Puna (Puna Mauka)	3131	$175.9	3.6%
Hawaii	210.11	Volcano-Mt. View	1496	$186.2	3.9%
Hawaii	210.13	Kea'au	1676	$168.3	2.9%
Hawaii	211.01	Kalapana-Kapoho	1689	$176.2	4.1%
Hawaii	211.06	Pahoa	2806	$186.8	4.1%
Hawaii	212.02	Ka'u	3060	$187.4	4.7%
Hawaii	213	South Kona	2271	$192.2	2.6%
Hawaii	214.02	Konawaena	1338	$161.8	2.3%
Hawaii	215.02	Hualalai	1616	$178.9	2.5%
Hawaii	215.04	Kealakehe	1355	$187.3	2.8%
Hawaii	215.07	Kalaoa	3534	$189.8	2.2%
Hawaii	215.09	Kaumalumalu-Keahou	2212	$227.3	3.2%
Hawaii	216.01	Kailua	3244	$184.9	2.6%
Hawaii	216.04	Holualoa	3112	$240.2	2.7%
Hawaii	217.02	Waimea-Pu'u Anahulu	3359	$200.1	2.2%
Hawaii	217.04	Kawaihae-Waikoloa	3136	$306.1	3.9%
Hawaii	218	North Kohala	2013	$202.8	2.9%
Hawaii	219.02	Honoka'a-Kukuihaele	1184	$194.8	2.9%
Hawaii	220	Pa'auhau-Pa'auilo	834	$189.5	3.1%
Hawaii	221.02	North Hilo	585	$202.0	3.9%
Honolulu	1.06	Hahaione-Mariners Ridge	3145	$125.1	1.1%
Honolulu	1.07	Kuapa Isle	848	$143.2	1.0%
Honolulu	1.08	Hawaii Kai Marina	1210	$135.6	1.2%
Honolulu	1.10	Kalama Valley	1387	$141.9	1.0%

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Honolulu	1.11	Lunalilo Park Subdivision	1413	$133.9	1.1%
Honolulu	1.12	Koko Marina	1929	$127.3	1.1%
Honolulu	1.14	Portlock	474	$183.0	1.2%
Honolulu	2	Kuliouou	1686	$148.5	1.1%
Honolulu	3.01	Aina Haina-Hawaii Loa Ridge	1051	$144.7	1.0%
Honolulu	3.02	Wailupe	900	$143.6	1.1%
Honolulu	4.01	Waialae Nui Ridge-Ainakoa	945	$122.9	0.9%
Honolulu	4.02	Waialae Iki	1265	$145.9	0.9%
Honolulu	5	Waialae-Kahala	1298	$155.9	1.2%
Honolulu	6	Diamond Head	486	$140.0	1.0%
Honolulu	7	Kaimuki: 22nd Avenue	1011	$135.3	1.3%
Honolulu	8	Kaimuki: Kapiolani Community College	1159	$141.8	1.4%
Honolulu	9.01	Waialae Nui Valley	1217	$100.9	1.2%
Honolulu	9.02	Maunalani Heights	1373	$146.1	1.2%
Honolulu	9.03	Lower Wilhelmina	1008	$135.2	1.3%
Honolulu	10	Upper Palolo	1046	$136.8	1.4%
Honolulu	11	Central Palolo	1124	$108.4	1.8%
Honolulu	12.01	Waialae Avenue-Pukele Avenue	1062	$134.0	1.4%
Honolulu	12.02	Lower Palolo	941	$143.6	1.8%
Honolulu	13	Kaimuki: 6th Avenue	1539	$123.2	1.4%
Honolulu	14	Kapaolono Field	876	$139.7	1.3%
Honolulu	15	Upper Kapahulu	1153	$133.9	1.3%
Honolulu	16	Lower Kapahulu	1308	$137.8	1.4%
Honolulu	17	Kapiolani Park	1009	$131.3	1.4%
Honolulu	18.01	Koa Avenue	619	$163.5	2.8%
Honolulu	18.03	Tusitala Street	1638	$108.2	2.4%
Honolulu	18.04	Jefferson School	765	$128.7	2.2%
Honolulu	19.01	Waikiki Beach	164	$180.9	2.6%
Honolulu	19.03	Ena Road	1504	$122.2	1.5%
Honolulu	19.04	Hobron Lane	1935	$135.2	1.8%
Honolulu	20.03	Seaside Avenue	988	$142.2	3.0%
Honolulu	20.04	International Market Place	707	$112.3	2.5%
Honolulu	20.05	Ala Wai-Niu Street	1020	$134.9	2.5%
Honolulu	20.06	Ala Wai-Olohana Street	1033	$131.9	2.5%
Honolulu	21	Olokele Avenue	1694	$89.6	1.8%
Honolulu	22.01	Kamoku Street-Iolani School	1752	$95.8	1.6%
Honolulu	22.02	Ala Wai Park-Lauiki Street	1535	$101.7	1.4%
Honolulu	23	Moiliili	2584	$91.9	1.9%
Honolulu	24.01	Lower McCully	1443	$85.3	1.7%
Honolulu	24.02	Upper McCully	1619	$88.5	1.8%
Honolulu	25	Lower Pawaa	1920	$98.2	1.9%

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Honolulu	26	Bingham Tract	1847	$90.7	1.6%
Honolulu	27.01	UH Manoa Campus	573	$130.6	1.6%
Honolulu	27.02	Punahou School	1938	$116.6	1.5%
Honolulu	28	St. Louis Heights	1442	$120.8	1.1%
Honolulu	29	East Manoa	906	$111.0	1.0%
Honolulu	30	Judd Hillside-Lowrey Avenue	1541	$119.4	1.0%
Honolulu	31.01	Woodlawn	1344	$137.0	1.2%
Honolulu	31.02	Upper Manoa	1096	$141.6	1.2%
Honolulu	32	Round Top-Tantalus	307	$146.9	1.1%
Honolulu	33	Makiki Heights	418	$118.2	1.0%
Honolulu	34.03	Thurston Street	2746	$96.6	1.4%
Honolulu	34.04	Makiki Fire Station	2235	$91.8	1.5%
Honolulu	34.05	Poki Street	1906	$84.3	1.6%
Honolulu	34.06	Lower Makiki	2947	$83.1	1.5%
Honolulu	34.07	Maryknoll School	538	$81.6	1.1%
Honolulu	35.01	Academy of Arts	1284	$85.5	1.3%
Honolulu	35.02	Upper Pawaa	2215	$81.3	1.5%
Honolulu	36.01	Sheridan Street	1885	$111.8	1.8%
Honolulu	36.03	Ahana Street	1705	$83.3	2.1%
Honolulu	36.04	Kaheka Street-Makaloa Street	1286	$86.6	1.9%
Honolulu	37	Ala Moana	3290	$137.0	1.6%
Honolulu	38	Kakaako	2930	$105.0	1.4%
Honolulu	39	Civic Center	244	$60.2	1.1%
Honolulu	40	Financial District	696	$112.5	1.3%
Honolulu	41	Queen's Hospital	2273	$80.8	1.7%
Honolulu	42	Queen Emma Gardens	1799	$92.9	1.0%
Honolulu	43	Punchbowl	2259	$105.4	1.5%
Honolulu	44	Pauoa	1557	$150.1	1.6%
Honolulu	45	Dowsett Highlands	2249	$115.1	1.0%
Honolulu	46	Puunui-Waokanaka Street	1193	$138.8	1.2%
Honolulu	47	Alewa-Kawananakoa	1478	$142.3	1.3%
Honolulu	48	Kamehameha Heights	1633	$136.2	1.5%
Honolulu	49	Lanakila	917	$140.5	2.1%
Honolulu	50	Kuakini	1529	$104.5	1.7%
Honolulu	51	Foster Botanical Garden	1584	$71.6	1.3%
Honolulu	52	Chinatown	1307	$70.1	2.2%
Honolulu	53	Aala	1594	$80.0	2.1%
Honolulu	54	Mayor Wright Housing	432	$87.1	3.6%
Honolulu	55	Palama	623	$95.8	1.9%
Honolulu	56	Kapalama	1917	$119.2	1.7%
Honolulu	57	Iwilei-Anuenue	912	$76.6	1.6%
Honolulu	58	Waiakamilo Road	1038	$81.7	1.8%

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Honolulu	59	Mokauea Street	542	$124.4	2.2%
Honolulu	60	Umi Street	1295	$154.4	1.8%
Honolulu	61	Kalihi Waena	817	$153.4	1.6%
Honolulu	62.01	Kam IV Road	1487	$130.9	1.8%
Honolulu	62.02	Linapuni Street	340	$130.1	4.0%
Honolulu	63.01	Kalihi Valley Park	823	$157.3	1.6%
Honolulu	63.02	Kalena Drive	622	$124.6	2.5%
Honolulu	64.01	Gulick Avenue-Likelike	419	$177.4	1.7%
Honolulu	64.02	Kamanaiki Street	1451	$158.0	1.6%
Honolulu	65	Upper Kalihi Valley	1076	$147.1	1.4%
Honolulu	66	Kahauiki Street	155	$181.6	1.8%
Honolulu	67.01	Tripler-Moanalua	1825	$125.3	1.2%
Honolulu	67.02	Red Hill	1148	$100.1	1.9%
Honolulu	68.02	Aliamanu	1650	$140.7	1.3%
Honolulu	68.04	Aliamanu Crater	1540	$113.5	1.9%
Honolulu	68.05	Salt Lake Country Club	2455	$107.9	1.3%
Honolulu	68.06	Ala Lilikoi	566	$126.6	1.3%
Honolulu	68.08	Ala Ilima Mauka	1965	$110.4	2.0%
Honolulu	68.09	Ala Ilima Makai	2061	$96.7	1.7%
Honolulu	69	Arizona Road	1169	$144.2	2.2%
Honolulu	70	Navy Marine Golf Course	1560	$155.0	2.7%
Honolulu	71	Nimitz Elementary School	921	$140.5	2.0%
Honolulu	73.02	Hangar Avenue-Vickers Avenue	1662	$143.6	2.0%
Honolulu	74	Ford Island	836	$159.7	2.1%
Honolulu	75.02	Halawa Valley	3	$24.5	0.5%
Honolulu	75.03	Halawa Heights	1534	$127.7	1.1%
Honolulu	75.04	Aloha Stadium	831	$117.6	1.7%
Honolulu	75.05	Foster Village	1709	$132.2	1.3%
Honolulu	75.06	Red Hill Military Housing	192	$115.7	1.3%
Honolulu	77.01	Lower Aiea	1145	$134.4	1.5%
Honolulu	77.02	Aiea Heights	1475	$127.3	1.1%
Honolulu	78.04	Lower Pearl City	575	$132.2	1.2%
Honolulu	78.05	Waiau Townhouses	1635	$124.0	1.5%
Honolulu	78.07	Pearl Ridge High Rise	2711	$104.0	1.6%
Honolulu	78.08	Pearlridge Center	1108	$117.6	1.8%
Honolulu	78.09	Newtown	1106	$116.0	1.0%
Honolulu	78.10	Royal Summit	1868	$118.1	1.0%
Honolulu	78.11	Pearl Country Club	1680	$127.1	1.3%
Honolulu	80.01	Hale Mohalu Hospital	780	$106.9	2.2%
Honolulu	80.02	Lower Waiau	764	$141.5	1.4%
Honolulu	80.03	Manana	1657	$116.4	2.0%
Honolulu	80.05	Pacific Palisades	1905	$127.5	1.2%

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Honolulu	80.06	Pearl City	1444	$118.7	1.4%
Honolulu	80.07	Pearl City Highlands	1555	$123.7	1.1%
Honolulu	83.01	Iroquois Point	1393	$181.4	2.3%
Honolulu	83.02	Campbell High School	1264	$196.0	2.1%
Honolulu	84.02	Ewa Beach	1786	$173.1	2.0%
Honolulu	84.05	Holomua School	1154	$171.4	1.6%
Honolulu	84.06	Hawaii Prince Golf Course	1725	$168.9	1.5%
Honolulu	84.07	Ocean Pointe	1103	$176.4	1.7%
Honolulu	84.08	Hoakalei Country Club	2489	$173.9	1.6%
Honolulu	84.10	Coral Creek Golf Course	1339	$162.9	1.5%
Honolulu	84.11	Geiger Road	1151	$123.9	1.6%
Honolulu	84.12	Ewa Gentry	2326	$112.3	1.4%
Honolulu	85.02	Kalaeloa	628	$135.2	2.8%
Honolulu	86.06	Kapolei Golf Course	2915	$160.5	1.7%
Honolulu	86.09	Ko Olina-Honokai Hale	600	$189.3	2.1%
Honolulu	86.10	Ko Olina Resort	392	$373.3	3.9%
Honolulu	86.12	Upper Makakilo	2013	$141.6	1.5%
Honolulu	86.13	Makakilo: Wainohia Street	213	$179.9	1.6%
Honolulu	86.14	Kunia West	3087	$151.4	1.7%
Honolulu	86.17	Ewa Villages	2673	$155.3	2.0%
Honolulu	86.22	Lower Makakilo	1015	$166.6	1.7%
Honolulu	87.01	Leeward Community College	1700	$149.9	1.5%
Honolulu	87.02	St. Joseph School	1602	$118.5	2.3%
Honolulu	87.03	West Loch	1635	$139.5	2.2%
Honolulu	88	Managers Drive	1519	$172.5	1.7%
Honolulu	89.06	Mililani Golf Course	1284	$127.9	1.6%
Honolulu	89.07	Mililani High School	1260	$134.2	1.8%
Honolulu	89.08	Mililani Marketplace	1803	$130.7	1.4%
Honolulu	89.09	Mililani District Park	1272	$122.7	1.4%
Honolulu	89.12	August Ahrens School	458	$169.4	1.5%
Honolulu	89.13	Robinson Heights	784	$151.1	1.3%
Honolulu	89.14	Honowai School	1169	$145.0	2.5%
Honolulu	89.15	Waipio Acres	1847	$116.5	1.6%
Honolulu	89.17	Mililani Town Center	1485	$117.4	1.1%
Honolulu	89.18	Mililani: Nob Hill	1697	$125.5	1.3%
Honolulu	89.20	Waipio Gentry	1509	$117.5	1.5%
Honolulu	89.21	Waipio	571	$134.2	1.3%
Honolulu	89.22	Waikele	2696	$131.0	1.4%
Honolulu	89.23	Seaview	1795	$112.8	1.4%
Honolulu	89.24	Royal Kunia	2014	$120.8	1.1%
Honolulu	89.25	Village Park	1880	$142.6	1.5%
Honolulu	89.26	Laulani Valley-Mililani Technology Park	720	$124.2	1.5%

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Honolulu	89.27	Koolani Drive	1606	$124.6	1.1%
Honolulu	89.28	Mililani Mauka Middle School	1127	$118.6	1.0%
Honolulu	89.29	Mililani Mauka-Meheula Parkway	1821	$116.1	1.7%
Honolulu	89.30	Mililani: Ainamakua Drive	772	$125.1	1.0%
Honolulu	89.31	Waiawa	791	$119.2	0.9%
Honolulu	90	Wheeler-East Range	871	$127.8	2.2%
Honolulu	91	Kaukonahua Road	1174	$141.9	1.9%
Honolulu	92	Wahiawa Mauka	2323	$139.0	1.6%
Honolulu	93	Wahiawa Waena	1521	$117.9	2.1%
Honolulu	94	Wahiawa Makai	1702	$131.9	2.6%
Honolulu	95.01	Kolekole Avenue	1634	$93.3	1.8%
Honolulu	95.02	Menoher Street	1297	$105.8	1.8%
Honolulu	95.03	Foote Avenue	322	$106.1	1.8%
Honolulu	95.04	Leilehua Avenue	403	$149.1	2.1%
Honolulu	95.07	Schofield: McCarthy Field	806	$126.9	2.6%
Honolulu	96.03	Maili	2805	$150.3	2.0%
Honolulu	96.08	Lualualei Transmitter	1240	$161.6	2.4%
Honolulu	97.01	Waianae Kai	1648	$169.6	4.2%
Honolulu	97.03	Lualualei-Camp Waianae	1608	$180.5	2.3%
Honolulu	97.04	Lualualei: Halona Road	670	$188.5	2.0%
Honolulu	98.01	Makua Valley	984	$177.8	2.9%
Honolulu	98.02	Makaha	1525	$197.5	3.1%
Honolulu	99.02	Haleiwa	1025	$175.9	2.0%
Honolulu	99.04	Kaena Point	1835	$157.1	2.0%
Honolulu	100	Kawailoa	1262	$129.0	2.1%
Honolulu	101	Waimea-Kahuku	2169	$204.7	2.0%
Honolulu	102.01	Hauula-Kaaawa	1516	$190.6	2.5%
Honolulu	102.02	Laie	1275	$209.4	2.1%
Honolulu	103.03	Kahaluu-Waikane	1292	$157.2	1.7%
Honolulu	103.05	Ahuimanu	1317	$159.4	1.4%
Honolulu	103.06	Haiku	2067	$140.4	1.2%
Honolulu	103.08	Kapunahala	1030	$138.8	1.3%
Honolulu	105.03	Kaneohe District Park	519	$139.7	1.6%
Honolulu	105.04	Waikalua Road	1317	$152.4	1.5%
Honolulu	105.05	Heeia Kea	1042	$150.7	1.2%
Honolulu	105.07	Kahuhipa Street	1699	$122.4	1.4%
Honolulu	105.08	Lilipuna Road	967	$138.3	1.4%
Honolulu	106.01	Puohala	998	$143.4	1.5%
Honolulu	106.02	Castle High School-Halekou Road	1566	$154.1	1.3%
Honolulu	107.01	Kokokahi	1305	$151.9	1.2%
Honolulu	107.02	Mokulele Drive	1158	$129.9	1.4%

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Honolulu	108.01	Mokapu West	753	$130.4	2.7%
Honolulu	108.02	Mokapu East	1795	$130.8	1.9%
Honolulu	109.01	Kalaheo Hillside	968	$136.7	1.2%
Honolulu	109.03	Oneawa Street-Kawainui	1374	$118.4	1.4%
Honolulu	109.04	Maluniu Avenue	1025	$144.8	1.4%
Honolulu	109.05	Ulupaina Street	865	$129.2	1.5%
Honolulu	110	Maunawili	1120	$142.2	1.0%
Honolulu	111.03	Olomana	1148	$150.2	1.2%
Honolulu	111.04	Enchanted Lakes	1473	$145.4	1.3%
Honolulu	111.05	Kailua Town	1395	$126.0	1.4%
Honolulu	111.06	Keolu	1761	$150.8	1.2%
Honolulu	112.01	Kalaheo Avenue	1472	$149.5	1.2%
Honolulu	112.02	Lanikai	539	$163.5	1.4%
Honolulu	113	Waimanalo	1366	$160.2	1.8%
Honolulu	114	Waipio Peninsula	736	$137.4	2.7%
Honolulu	115	Kapolei	2734	$150.7	1.7%
Honolulu	9400.01	Waimanalo Beach-Homesteads	986	$167.7	1.8%
Honolulu	9400.02	Nanakuli	1578	$165.1	2.3%
Honolulu	9814	Nimitz-Airport Commercial	4	$160.6	4.6%
Maui	319	Kalawao	47	$203.3	3.4%
Maui	301	Hana	498	$244.9	3.5%
Maui	302.01	Huelo	818	$175.8	2.0%
Maui	302.02	Ha'iku	2769	$177.1	1.9%
Maui	303.01	Kula	3604	$159.7	1.8%
Maui	303.03	Wailea	1679	$322.7	3.4%
Maui	304.02	Pukalani	3140	$169.6	2.0%
Maui	304.03	Makawao	1297	$170.4	1.9%
Maui	304.04	Hali'imaile	1907	$157.8	2.2%
Maui	305.01	Pa'ia	727	$225.7	2.6%
Maui	307.05	Kihei Mauka	1001	$209.5	2.4%
Maui	307.06	Kealia	1000	$196.4	2.7%
Maui	307.07	Waipuilani	3146	$217.7	2.9%
Maui	307.08	Halama	1070	$188.8	2.7%
Maui	307.09	Kamaole	1784	$263.7	3.8%
Maui	307.10	Keawakapu	891	$314.2	4.7%
Maui	308	Waihee-Waikapu	2252	$160.5	1.8%
Maui	309.01	West Central Wailuku	1069	$133.1	3.3%
Maui	309.02	East Central Wailuku	1279	$168.0	2.3%
Maui	309.03	North Wailuku	1724	$176.3	2.0%
Maui	310	South Wailuku	3378	$168.6	1.8%
Maui	311.01	West Kahului	2196	$172.2	2.2%
Maui	311.02	Central Kahului	1624	$178.6	2.6%

County	Census tract	Census tract name	Housing count	Average monthly electricity cost	Average electricity burden
Maui	311.03	Southeast Kahului	2491	$180.4	1.9%
Maui	314.02	Kahoma	893	$202.1	2.7%
Maui	314.04	Lahaina	1254	$182.0	2.7%
Maui	314.05	Lahainaluna	1427	$193.3	2.1%
Maui	315.01	Kapalua	726	$345.6	3.9%
Maui	315.02	Honokahua	1996	$229.8	2.6%
Maui	315.03	Honokowai	1038	$295.7	3.9%
Maui	316.01	Lana'i	1143	$191.5	3.3%
Maui	317	East Moloka'i	1513	$210.0	4.0%
Maui	318.01	West Moloka'i	807	$276.0	6.2%
Maui	319	Spreckelsville	1710	$190.4	2.5%
Maui	320	Launiupoko	423	$297.6	2.7%
Kauai	401.03	Princeville-Kilauea	1888	$347.2	4.2%
Kauai	401.04	Ha'ena-Hanalei	311	$316.9	5.9%
Kauai	402.04	Wailua Houselots	1995	$198.4	2.4%
Kauai	402.05	Wailua Homesteads	1563	$230.6	3.3%
Kauai	403	Kapa'a	2615	$247.0	3.2%
Kauai	404	Puhi-Hanama'ulu	2666	$220.0	2.6%
Kauai	405	Lihu'e	2266	$202.6	2.6%
Kauai	406.03	Koloa-Po'ipu	1035	$334.2	4.3%
Kauai	406.04	Omao-Kukui'ula	1233	$220.1	3.2%
Kauai	407	Eleele-Kalaheo	2877	$212.7	2.6%
Kauai	408	Kaumakani-Hanapepe	1186	$202.3	2.9%
Kauai	409	Kekaha-Waimea	1789	$222.8	3.0%
Kauai	9400	Anahola	1100	$218.4	3.3%

Notes: Household electricity burden is the percentage of household income spent on electricity bills. It is calculated as the ratio of the average annual electricity cost to average annual household income for each household group.
Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. (2020). Low-Income Energy Affordability Data - LEAD Tool - 2018 Update.

Figure A - 1. Electricity burden by census tract: State of Hawai'i

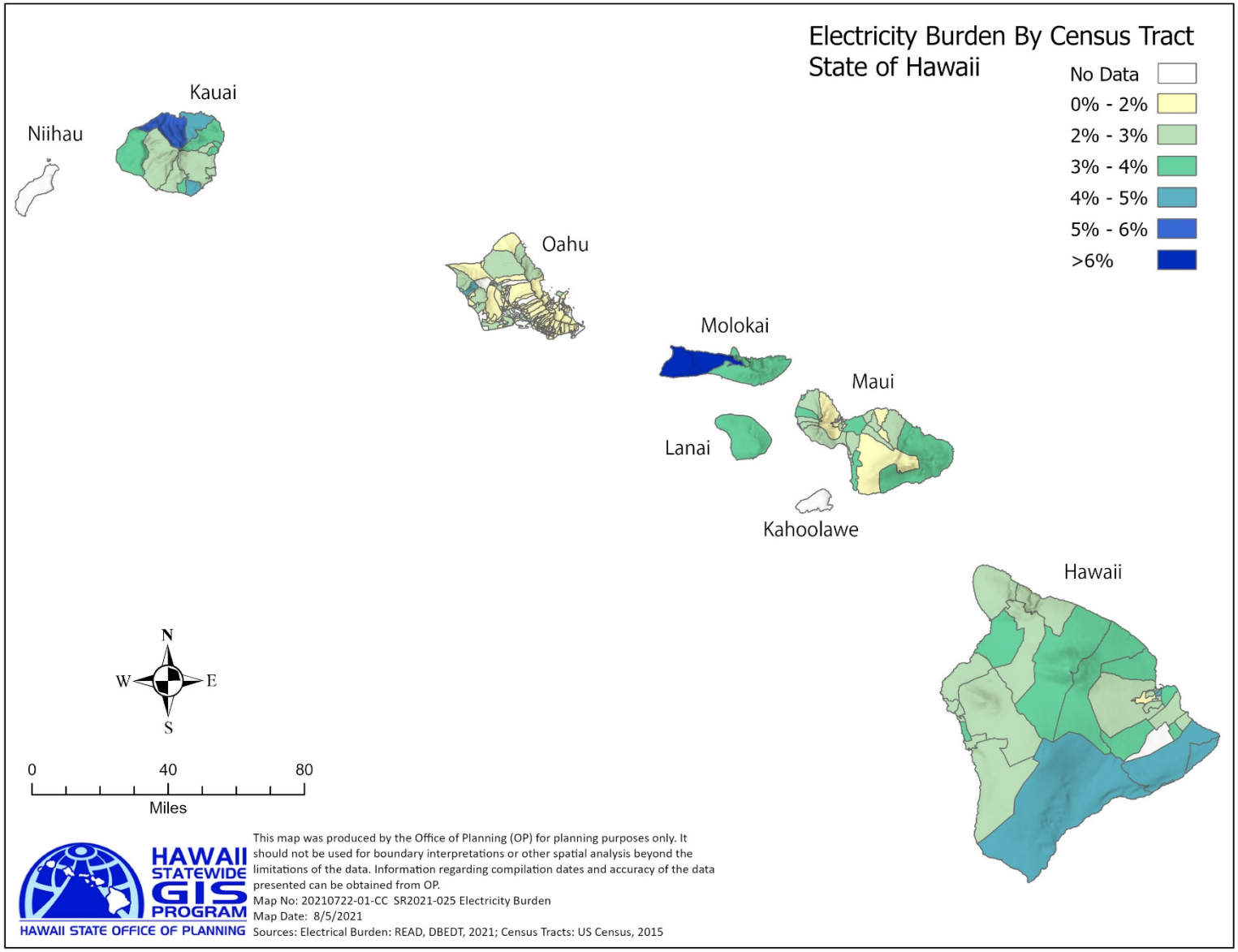


Figure A - 2. Electricity burden by census tract: City & County of Honolulu

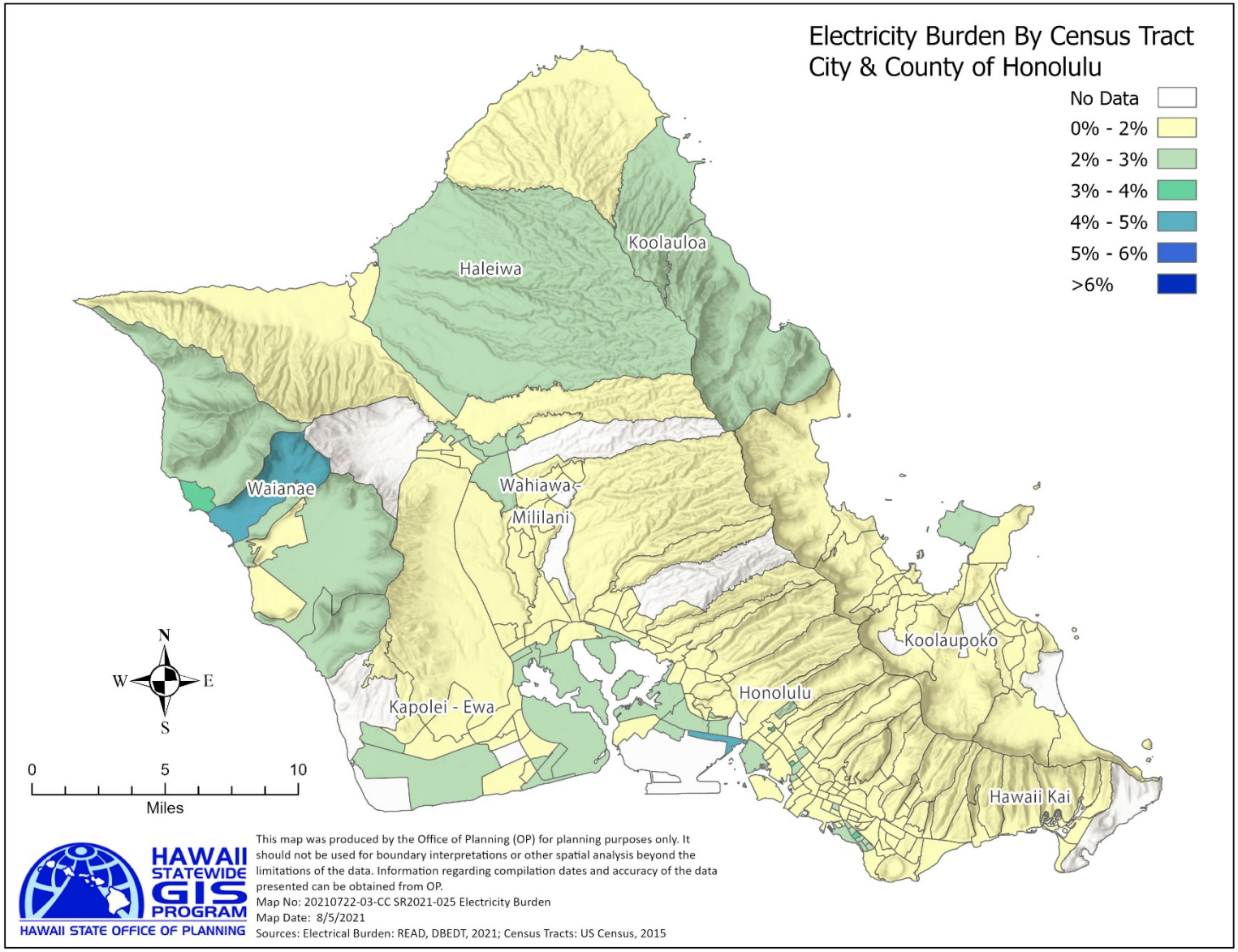


Figure A - 3. Electricity burden by census tract: County of Hawai'i

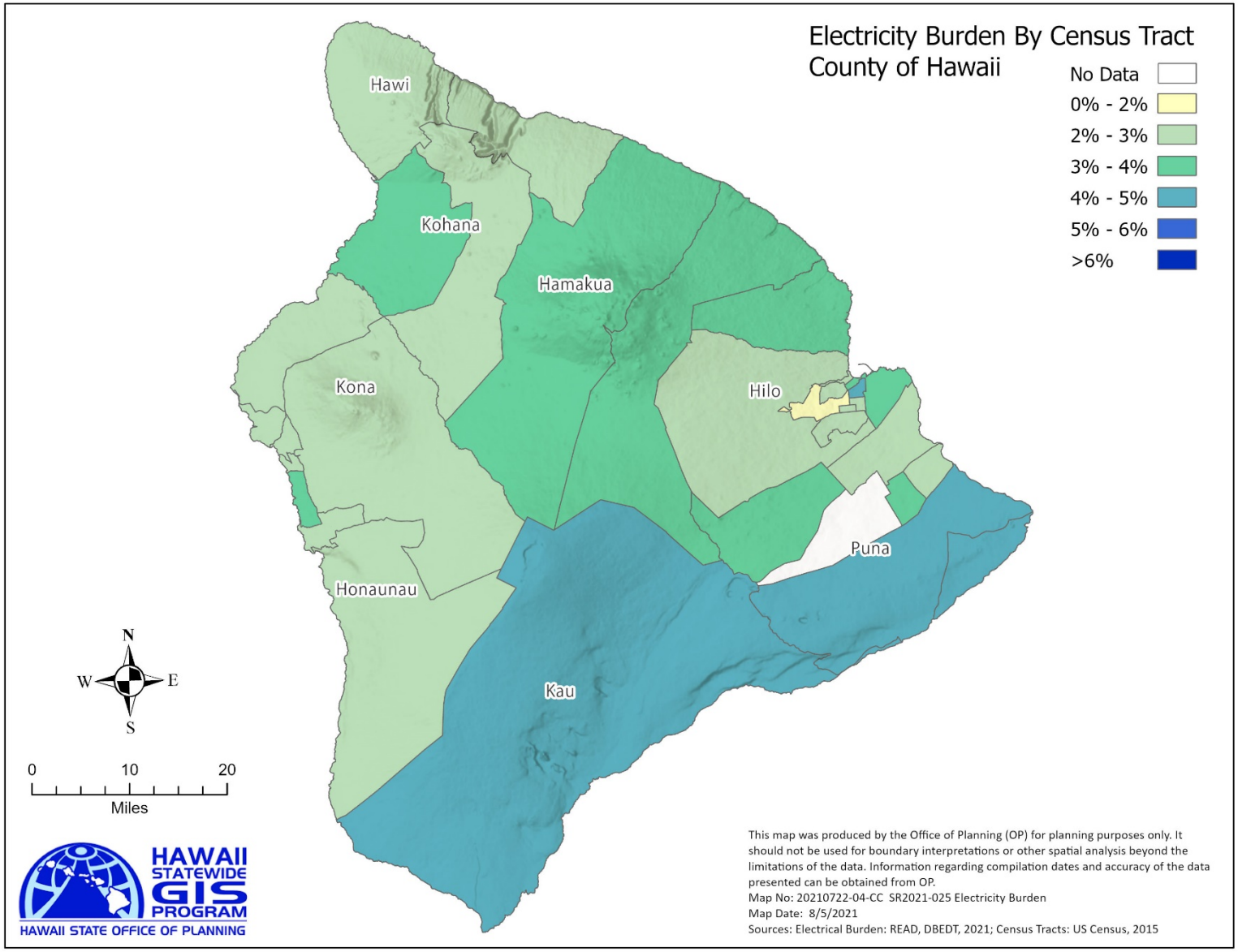


Figure A - 4. Electricity burden by census tract: County of Maui

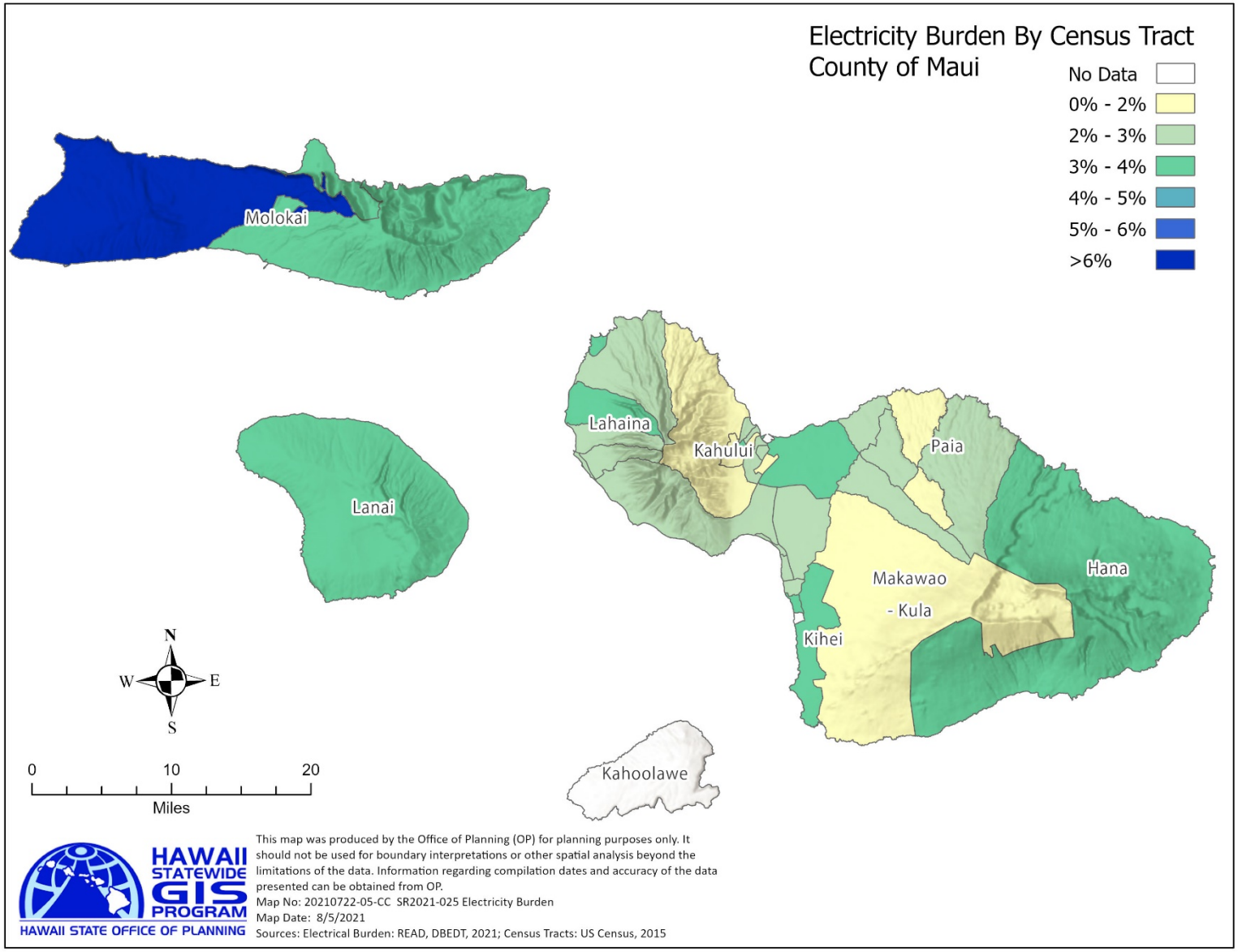


Figure A - 5. Electricity burden by census tract: County of Kauai