

SECTION 16

COMMUNICATIONS, POWER, AND SCIENCE

This section presents statistics relating to postal services, telephones, telegraphs, radio, television, newspapers, electrical and gas power and energy, and scientific resources.

Hawaii is served by all communications media. The most recent statistics indicate 80 post offices, 446,000 telephones, 31 radio stations, 12 television stations, and seven daily newspapers.

Electricity sales exceeded 3.7 billion kilowatt-hours in 1970, or 6,822 per housing unit. Manufactured gas sales totaled 28 million therms.

The State is also well served with scientific resources. A 1971 inventory reported 301 companies and agencies with research or scientific capabilities. Employment in these organizations was more than 22,000.

Information on communications, power and science can be obtained from reports and records of the U.S. Post Office Department, Federal Communications Commission, Hawaii State Public Utilities Commission, individual utility companies, and Audit Bureau of Circulations. Similar data for the nation as a whole can be found in the *Statistical Abstract of the United States: 1971*, Sections 18, 19, and 20.

Table 153.—POSTAL SERVICE: 1851 TO 1971

Year	Number of post offices ¹	Gross postal receipts (\$1,000) ²	Pieces of mail handled (1,000) ³
1851-1852	(NA)	1	34
1855	(NA)	7	74
1858-1860	33	2	(NA)
1864-1866	(NA)	3	(NA)
1968-1870	(NA)	6	139
1874-1876	(NA)	10	101
1878-1880	(NA)	15	175
1884-1886	55	33	(NA)
1890	(NA)	60	1,579
1895	(NA)	61	(NA)
1901	90	103	(NA)
1905	89	123	(NA)
1910	93	(NA)	(NA)
1915	93	(NA)	(NA)
1920	91	352	(NA)
1925	93	611	(NA)
1930	93	774	(NA)
1935	94	834	(NA)
1940	94	1,480	(NA)
1945	91	22,726	(NA)
1950	97	3,955	(NA)
1955	101	5,603	(NA)
1960	83	7,732	127,000
1961	82	8,434	(NA)
1962	82	11,041	(NA)
1963	80	13,037	(NA)
1964	80	(NA)	(NA)
1965	80	13,692	144,000
1966	80	14,984	147,000
1967	80	15,881	149,000
1968	80	17,617	159,000
1969	80	20,178	172,000
1970	80	20,840	187,000
1971	78	21,976	201,000

NA Not available

¹Includes all 1st-, 2nd-, 3rd-, and 4th-class post offices; excludes branches and stations. Total for 1858-1860 refers to 1859; 1884-1886, to number in operation at beginning (and also end) of biennium ended March 31, 1886; data for 1901 and later years, as of June 30.

²Receipts for 1851-1852 refer to year ended March 31, 1852 (the earliest full year available after establishment of the postal system in December 1850); for 1855, to either calendar 1855 or the year ended March 31, 1856; for 1858-1886, to annual averages for biennial periods ended March 31; for 1890, to the year ended March 31, 1890; for 1895, to the calendar year; and for 1901 and later years, to years ended June 30.

³Data for 1851-1880 limited to letters; for 1890, to letters and prints; for 1960 and thereafter, to all pieces originated in Hawaii. Total for 1851-1852 refers to year ended March 31, 1852; 1855, either to calendar year or year ended March 31, 1856; for 1868-1890, to annual averages for biennial periods ended March 31; for 1960 and later years, to years ended June 30.

Source: *Report of the Minister of the Interior* for 1856, 1880, 1886, and 1890; *Report of the Minister of Finance* for 1860, 1866, 1870, 1876, and 1895; *Annual Report of the Postmaster General* for 1913-1970; *Statistical Abstract of the United States* for 1923-1971; U.S. Postal Service, records; Henry A. Meyer et al., *Hawaii, Its Stamps and Postal History* (1948), p. 276.

**Table 154.—TELEPHONES IN SERVICE, TELEPHONE CALLS, AND TELEGRAPH MESSAGES:
1880 TO 1971**

Year	Telephones in service ¹		Completed calls ²			Telegraph messages ³	
	State total	Oahu	Local (1,000)	Inter-Island	Transpacific	Total	Cable only
1880	(NA)	47	(NA)	—	—	—	—
1885	(NA)	666	(NA)	—	—	—	—
1890	(NA)	931	(NA)	—	—	—	—
1895	(NA)	1,152	(NA)	—	—	—	—
1900	(NA)	1,393	(NA)	—	—	—	—
1905	(NA)	1,800	(NA)	—	—	(NA)	(NA)
1910	(NA)	2,657	(NA)	—	—	(NA)	(NA)
1915	6,527	(NA)	(NA)	—	—	(NA)	(NA)
1920	10,761	(NA)	(NA)	—	—	(NA)	(NA)
1925	18,332	14,471	(NA)	—	—	(NA)	(NA)
1930	24,319	19,169	(NA)	—	—	(NA)	(NA)
1935 ⁴	24,664	19,137	(NA)	16,748	1,332	261,456	52,732
1940 ⁵	39,179	31,799	106,464	43,661	9,687	336,537	74,777
1945	54,734	44,432	125,436	87,347	93,602	713,756	164,326
1950	99,310	79,968	202,344	247,071	92,481	337,984	50,598
1955	143,063	114,678	290,528	285,328	179,274	381,725	—
1960	208,411	171,793	413,908	512,404	516,527	499,331	—
1961	221,599	183,401	422,729	519,789	569,122	492,610	—
1962	233,680	193,570	434,132	573,789	702,428	511,890	—
1963	247,629	205,342	449,933	651,787	750,161	514,782	—
1964	265,793	220,939	470,097	794,060	926,424	559,426	—
1965	283,689	236,006	506,198	948,585	1,336,557	561,377	—
1966	302,506	251,505	539,632	1,129,492	1,687,105	589,386	—
1967	323,849	268,190	562,522	1,332,551	2,144,049	579,696	—
1968	352,196	291,317	585,071	1,624,206	2,594,151	463,985	—
1969	381,982	314,915	611,919	1,963,219	3,267,601	466,197	—
1970	414,165	339,952	631,543	2,288,320	3,753,449	434,936	—
1971	445,995	365,733	667,542	2,569,758	4,476,130	(NA)	—

NA Not available.

¹As of December 31. Includes telephones of the Hawaiian Bell Telephone and Telegraph Co. for 1880 and 1885 and the Mutual Telephone Company (renamed the Hawaiian Telephone Company in 1953) from 1885 to the present time, and is thus complete with regard to public telephone service on Oahu for the entire period of record. Other companies, not included in these statistics, operated on Hawaii and Maui until 1919 and Kauai until 1929. Neighbor Island midyear totals for all companies combined (according to the *Annual Reports of the Governor of Hawaii*) were 1,997 in 1915, 3,301 in 1920, and 4,274 in 1925.

²Statewide totals. The inter-Island and transpacific data refer to paid calls (whether paid in Hawaii or elsewhere). The transpacific data include both in and out calls. Inter-Island and transpacific radiotelephone service began late in 1931.

³Combined totals for messages between Hawaii and the Mainland United States in either direction, whether by cable or radio. Cable service was begun in 1902 and terminated in 1951.

⁴Telegraph data refer to 1936, the earliest year available.

⁵Data on local telephone calls refer to 1941, the earliest year available.

Source: Hawaiian Telephone Co., records; Federal Communications Commission, records.

Table 155.—COMMERCIAL AND EDUCATIONAL RADIO AND TELEVISION BROADCAST STATIONS ON THE AIR AND DAILY NEWSPAPER CIRCULATION: 1912 TO 1972

Year	Commercial broadcast stations ¹			Educational broadcast stations ¹		Daily newspaper circulation ²		
	AM	FM	TV	FM	TV	<i>Honolulu Advertiser</i>	<i>Honolulu Star-Bulletin</i>	<i>Hawaii Tribune-Herald</i>
1912	—	—	—	—	—	3,210	4,262	(NA)
1915	—	—	—	—	—	4,900	4,606	(NA)
1920	—	—	—	—	—	5,793	8,509	(NA)
1925	2	—	—	—	—	12,432	16,444	(NA)
1930	1	—	—	—	—	12,308	20,618	(NA)
1935	2	—	—	—	—	13,024	25,360	(NA)
1940	3	—	—	—	—	26,509	40,057	4,674
1945	4	—	—	—	—	86,353	109,185	9,166
1950	12	—	—	—	—	45,449	79,568	9,848
1955	13	1	3	1	—	46,712	90,782	10,222
1960	17	1	7	2	—	64,719	104,107	9,884
1961	18	1	8	1	—	68,621	105,273	10,421
1962	20	1	9	1	—	61,702	103,220	10,679
1963	20	1	10	1	—	60,551	103,359	10,826
1964	23	2	10	1	—	64,119	107,077	11,006
1965	23	2	10	—	—	64,763	107,342	11,136
1966	24	2	10	—	—	68,351	110,735	11,447
1967	25	2	10	—	2	69,686	114,770	10,944
1968	25	3	10	—	2	73,799	118,529	11,645
1969	25	4	10	—	2	74,869	122,680	12,483
1970	25	4	10	1	2	77,214	126,913	13,125
1971	25	4	10	1	2	74,441	126,379	13,642
1972	25	5	10	1	2	—	—	—

NA Not available.

¹As of January 1 (except 1950, June 7). Data before 1950 refer to licensed stations; from 1950 forward, to stations on the air. Television station totals include satellite stations (6 in 1972) but exclude relay stations. Commercial AM broadcasting in Hawaii began in 1922; FM, both commercial and educational, in 1953; commercial television, in 1952; and educational television, in 1966.

²For the three English-language dailies. Data prior to 1940 are October 1 figures supplied by the publishers to the U.S. Post Office; data for 1940 and later years are fourth quarter averages compiled by the Audit Bureau of Circulations, covering daily (but not Sunday) editions. Regular daily newspaper publication began in Hawaii in 1882.

Source: Federal Communications Commission, records; FCC data on broadcast stations on the air, cited in *Statistical Abstract of the United States, 1951-1970*; Hawaii Newspaper Agency, Inc., records; Hawaii Tribune-Herald, records; Hawaii State Department of Planning and Economic Development, *Communications Statistics for Hawaii, 1964* (Statistical Report 19, May 31, 1964).

**Table 156.—TELEPHONE AVAILABILITY AND TELEVISION SETS IN OCCUPIED HOUSING UNITS,
BY COUNTY: 1970**

Subject	State total	City and County of Honolulu	Hawaii County	Kauai County	Maui County
All occupied units	203,088	164,763	17,260	8,282	12,783
Telephone:					
Available	185,265	152,198	14,907	7,064	11,096
None	17,823	12,565	2,353	1,218	1,687
Number of television sets:					
One	143,288	114,351	13,101	6,376	9,460
Two or more	46,373	41,254	2,286	864	1,969
None	13,427	9,158	1,873	1,042	1,354

Source: U.S. Bureau of the Census, *U.S. Census of Housing: 1970*, Final Report HC(1)-B13, tables 32, 37, 62, and 63.

Table 157.—CABLE TELEVISION SUBSCRIBERS: DECEMBER 31, 1970 AND 1971

Year (Dec. 31)	State total	City and County of Honolulu	County of Hawaii	County of Kauai ²	County of Maui
1970	12,091	11,066	—	—	1,025
1971	13,718	12,581	—	37	1,100

¹Began operation in November 1971.

Source: Hawaii State Department of Regulatory Agencies, CATV Division.

**Table 158.—POSTAL, TELEPHONE AND TELEGRAPH RATES AND NEWSPAPER PRICES
JULY 1, 1929 TO 1971**

Subject	1929 ¹	1940	1951	1960	1970	1971
Postage rates ²						
First-class letter	0.02	0.03	0.03	0.04	0.06	0.08
Air mail letter	—	0.25	0.06	0.07	0.10	0.11
Telephone rates:						
Local calls ³	0.05	0.05	0.05	0.10	0.10	0.10
Honolulu-Hilo ⁴	3.00	2.00	2.00	1.75	0.90	0.90
Honolulu-San Francisco ⁴ ..	21.00	9.00	7.50	6.00	3.90	3.90
Cable rate ⁵	0.20	0.12	0.19	0.21	0.21	0.21
Newspaper prices:						
Daily ⁶	0.05	0.05	0.05	0.10	0.10	0.15
Saturday ⁷	0.05	0.05	0.10	0.10	0.10	0.15
Sunday ⁸	0.10	0.10	0.15	0.15	0.25	0.35

¹Telephone rates refer to 1931.

²Between Hawaii and U.S. Mainland. Air mail letter rate for 1940 is per half ounce; all other rates listed are per ounce.

³From pay telephones in Honolulu. The present rate was established on December 30, 1952.

⁴Station to station, 3-minute daytime call. Excludes tax.

⁵Between Oahu and San Francisco, per full rate word. Minimum number of chargeable words in a full rate cablegram or radiogram was five in 1940 and 1951, seven in 1960 and thereafter (there was no minimum in 1929, although, as a practical matter, cablegrams must have at least three and probably four or five words).

⁶*Honolulu Advertiser*, Monday through Saturday; *Honolulu Star-Bulletin*, Monday through Friday.

⁷*Honolulu Star-Bulletin*.

⁸*Honolulu Advertiser*, 1929-1960; *Honolulu Star-Bulletin*, 1960; *Honolulu Star-Bulletin and Advertiser*, 1970 and thereafter.

Source: Postmaster, U.S. Post Office, Honolulu; Public Relations Department, Hawaiian Telephone Company; Secretary, Federal Communications Commission; newspaper mastheads.

Table 159.—ELECTRIC UTILITIES: 1901 TO 1970

Year	Customers, Dec. 31 ¹		KWH sold (1,000) ²			Average annual use (KWH) ³		Average rate (\$/KWH)		Installed capacity (KW)
	Residential	Other	Total	Residential	Other	Residential	Other	Residential	Other	
1901	—	—	1,690	—	—	—	—	—	—	—
1910	—	—	3,926	—	—	—	—	—	—	—
1920	14,800	—	18,039	—	—	301	—	—	—	—
1930	41,600	8,241	86,699	—	—	568	—	—	—	—
1940	74,248	—	240,040	—	—	1,244	—	—	—	—
1950	85,069	21,018	599,309	203,284	396,025	2,390	18,842	.029406	.020066	252,955
1959	127,336	24,602	1,422,145	519,222	902,923	4,078	36,701	.030240	.021664	469,343
1960	132,440	25,138	1,602,197	580,849	1,021,348	4,386	40,630	.029723	.021559	469,343
1961	136,788	25,664	1,766,031	624,730	1,141,301	4,567	44,471	.029057	.021015	527,708
1962	140,661	26,440	1,966,105	678,628	1,287,477	4,825	48,694	.028886	.020722	543,737
1963	144,638	27,194	2,077,570	730,317	1,347,254	5,049	49,542	.028389	.020609	628,312
1964	149,547	28,137	2,284,275	786,118	1,498,157	5,257	53,245	.027949	.020133	716,312
1965	154,822	28,901	2,445,024	853,086	1,591,939	5,510	55,082	.027569	.020072	731,395
1966	160,784	29,492	2,639,866	912,616	1,727,250	5,676	58,567	.027290	.019949	830,644
1967	166,256	30,161	2,832,468	989,785	1,842,684	5,953	61,109	.027039	.020037	829,157
1968	171,346	30,821	3,109,256	1,083,233	2,026,023	6,322	65,735	.026803	.020022	894,532
1969	178,569	31,761	3,426,052	1,174,502	2,251,550	6,577	70,890	.026548	.019647	896,271
1970	186,282	32,721	2,758,094	1,270,732	2,487,362	6,822	76,017	.026810	.020113	1,007,021
COUNTIES:										
1970										
Honolulu	144,854	23,677	3,275,673	1,064,700	2,210,973	7,350	93,381	.024381	.017750	—
Hawaii	17,897	4,327	214,364	92,071	122,293	5,144	28,263	.040359	.038321	—
Kauai	8,673	1,596	102,686	38,455	64,231	4,434	40,245	.043355	.035921	—
Maui	14,858	3,121	165,371	75,506	89,865	5,082	28,794	.036111	.042180	—

¹Data limited to Oahu before 1930. The 1930 Oahu totals were 30,972 residential and 6,682 nonresidential customers.

²Amount generated (rather than amount sold) for 1901 and 1910. Data before 1930 limited to Oahu. The 1930 Oahu total was 78,633M KWH, or 90.7 percent of the all-Island total.

³Data before 1950 limited to Oahu. The 1950 residential average on Oahu was 2,688 KWH.

Source: Hawaii State Public Utilities Commission, *Annual Report . . . 1931* (p. 23); *Historical Data, Gas and Electric Utilities, State of Hawaii, 1959 to 1968* (unpaged), and records; Territorial Planning Board, *First Progress Report* (p. 292); *Annual Report of the Governor of Hawaii . . . 1941* (p. 75); Hawaiian Electric Co., Ltd., records.

Table 160.—GAS UTILITIES: 1910 TO 1970
(Data limited to Honolulu Gas Co., Ltd. Excludes bottled gas)

Year	Customers		Gas sold (therms) ¹			Ave. ann. use (therms)		Average rate (dollars per therms)		Installed capacity (1,000 therms)
	Residential	Other	Total	Residential	Other	Residential	Other	Residential	Other	
1910		1,928	—	—	—	—	—	—	—	—
1920		6,762	—	—	—	—	—	—	—	—
1930		14,144	—	—	—	—	—	—	—	—
1940		24,265	4,405	—	—	—	—	—	—	—
1950	32,392	2,935	11,453	8,755	2,698	270	919	.2348	.1744	—
1959	35,826	2,657	14,869	10,018	4,851	280	1,826	.3538	.2246	2,400
1960	35,536	2,555	15,881	10,299	5,582	290	2,185	.3619	.2280	2,400
1961	35,857	2,227	16,790	10,502	6,289	293	2,824	.3685	.2263	2,400
1962	35,463	2,050	18,197	10,839	7,358	306	3,589	.3679	.2262	2,400
1963	35,034	1,874	18,914	10,775	8,139	308	4,343	.3666	.2238	2,400
1964	34,994	1,515	19,697	10,919	8,778	312	5,794	.3639	.2202	2,400
1965	34,775	1,428	20,397	11,016	9,381	317	6,570	.3634	.2186	2,400
1966	34,956	1,355	21,019	11,171	9,848	320	7,268	.3626	.2185	2,400
1967	35,000	1,382	22,547	11,348	11,198	324	8,103	.3618	.2179	2,400
1968	34,955	1,300	23,570	11,331	12,240	324	9,415	.3618	.2169	2,400
1969	34,829	1,305	25,649	11,848	13,801	340	10,576	.3588	.2156	2,400
1970	32,163	3,979	27,831	10,891	16,940	339	4,257	.3619	.2227	2,400
COUNTIES:										
1970										
Honolulu	29,880	3,971	26,696	10,026	16,670	336	4,198	.3586	.2225	—
Hawaii	2,016	8	1,074	270	804	399	33,683	.3933	.2392	—
Kauai	—	—	—	—	—	—	—	—	—	—
Maui	267	—	61	61	—	228	—	.4789	—	—

¹Data for years before 1940 were expressed in cubic feet rather than therms. Cubic feet of gas sold amounted to 47,484,100 in 1910, 194,062,800 in 1920, 431,934,600 in 1930, and 855,420,400 in 1940.

Source: Hawaii State Public Utilities Commission, *Historical Data, Gas and Electric Utilities, State of Hawaii, 1959 to 1968* (unpaged), and records; Territorial Planning Board, *First Progress Report* (p. 307); Chamber of Commerce of Honolulu, *General Information About Honolulu ... 1936-1940*, p. 27.

**Table 161.—TYPICAL RESIDENTIAL UTILITY RATES, FOR OAHU:
JANUARY 1, 1972**

Utility and usage	Monthly rate (dollars)
Water:	
¾-inch meter, 5,000 gallons	4.25
¾-inch meter, 10,000 gallons	6.10
¾-inch meter, 20,000 gallons	9.80
1½-inch meter, 50,000 gallons	26.00
Electricity:	
100 kilowatt-hours	4.94
250 kilowatt-hours	8.87
500 kilowatt-hours	14.08
500 kilowatt-hours, with electric waterheater	13.48
Gas:	
10 therms	4.84
25 therms	9.14
50 therms	16.14
100 therms	30.14
Telephone:	
Individual line	9.20
Two-party line	7.75

Source: Honolulu Board of Water Supply, *Water Service Rate Schedule, Effective December 23, 1970*; Hawaiian Electric Company, Inc., Customer Service Department; Honolulu Gas Co., Ltd., Schedule No. 20, Effective August 1, 1970; Hawaiian Telephone Co., P.U.C. Tariff No. 2, Effective December 27, 1971.

Table 162.—SCIENTIFIC RESOURCES: 1971

TYPE OF ORGANIZATION	Number of companies or agencies		Total employment		Professional and technical employment	
	1971	1970	1971	1970	1971	1970
I.—Employing organizations	301	265	22,230	20,490	5,681	5,094
Organizations with scientific capabilities ..	59	39	7,511	7,158	1,446	1,339
Computer sciences	45	27	1,883	1,351	1,034	637
R & D and allied organizations	45	46	3,612	3,513	637	629
Testing laboratories	24	23	854	704	474	415
Government research agencies	99	101	7,677	7,183	1,868	1,882
Federal	23	20	1,670	1,703	277	260
Military	12	12	1,037	806	164	150
State, except U.H.	33	34	2,323	1,950	684	662
University of Hawaii	18	22	998	1,133	429	622
County	13	13	1,649	1,591	224	188
Private research agencies	29	29	693	581	222	192
	Number of associations		Regular membership		Associate membership	
Type of Organization	1971	1970	1971	1970	1971	1970
II.—Professional associations	45	43	10,365	10,226	604	545
	Libraries		Scientific books			
Type of library	1971	1970	1971		1970	
III.—Scientific libraries	24	27	677,917		656,918	
	Institutions or units		Full-time enrollment		Part-time enrollment	
Institution	1971	1970	Spring 1971	Spring 1970	Spring 1971	Spring 1970
IV.—Educational institutions	35	35	32,553	28,101	39,629	29,345
East-West Center	6	6	695	550	1,765	—
University of Hawaii ¹	14	14	19,387	16,930	33,441	28,018
Community Colleges	6	5	8,609	6,348	3,962	989
Private Colleges	5	5	2,342	2,112	311	288
Business and technical schools	4	5	1,520	2,161	150	50

¹Because of different enrollment definitions, these data are not comparable to those for the University of Hawaii in Section 3.

Source: Hawaii State Department of Planning and Economic Development, *Hawaii's Scientific Resources, 1971 Directory*, 5th Edition, p. 5.

Table 163.—LARGE OPTICAL TELESCOPES: APRIL 1972

Location	Operated by	Diameter (inches)
Mauna Kea	Univ. of Hawaii	88
do	do	24
do	do	24
Haleakala	Univ. of Michigan	60
Ewa Beach	Private	16
Honolulu	Bishop Museum	12

Source: Bernice P. Bishop Museum; University of Hawaii, Institute for Astronomy.