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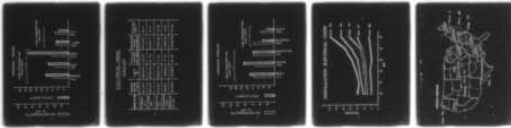
ARMY FACILITIES ENGINEERING SUPPORT AGENCY FORT BELV--ETC F/G 5/1
INSTALLATION ELECTRICAL CONSUMPTION AND COST DATA.(U)
JUL 76 C KUKIELKA, P BAUM, M BOTROS
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INSTALLATION ELECTRICAL CONSUMPTION AND COST DATA

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15 July 1976

Final Report

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report is a compilation of electric energy consumption and cost data for 43 installations in CONUS. The bases were grouped according to command: FORSCOM, TRADOC (including West Point), DARCOM, HSC and ACC. The data was broken down by cost and consumption with each being reduced subcategories. Historical unit cost data for regional located bases for each region is displayed pictorially. Projected 1986 cost have been made for each region using historical data as a guide.			

Introduction

This report is a compilation of electric energy consumption and cost data for 43 Army installations in CONUS. The bases were grouped according to commands: FORSCOM, TRADOC (including West Point), DARCOM, HSC and ACC. The data was broken down by cost and consumption with each being reduced into subcategories. Historical unit cost data for regionally located bases is displayed pictorially. Projected 1986 cost have been made for each region using the historical data as a guide.

FY75

The actual FY75 electrical cost and consumption is presented in Tables 1 through 5. An explanation of each table is given below.

The first three tables are concerned with the installation electrical consumption regardless of its use. Heading description appear below.

TRADOC - Training and Doctrine Command

FORSCOM - Forces Command

DARCOM - US Army Material Development & Readiness Command

HSC - Health Services Command

ACC - Army Communications Command

Total Kwhr Consumption/Yr X 10^3 - Total electricity energy consumed at the bus bar. (Megawatts).

Cost - Price paid at the bus bar. (\$ dollars).

Mills/kw - The unit price paid for electricity, ~~this unit homogenizes~~ the demand and consumption charge.

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Ave Kw - The power that would be delivered to the installation if its electric use were a constant with time. (Total consumption/8769 hr).

Cents/Watt - The price paid per watt during an interval year (as opposed to a unit year).

Population - The installations effective population; this is the resident population plus one third the installations non-resident population.

KwH/Person/Yr - Per capita consumption; the amount of electricity used per person per year. (Normalized over the effective population).

Tables 4 & 5 address the areas of consumption on the installations. Since electricity is normally metered at the substation no categorical information exist. It was therefore assumed that electrical consumption parallels thermal use which has been analyzed from TRADOC and FORSCOM (Ref 1). A percentage breakdown of use appears below:

<u>Category</u>	<u>% of Total</u>
Troop Housing	30
Family Housing	36
Admin & Training	12
Medical	4
Community Service & Commercial	8
Storage	4
Maintenance & Production	6

For PARCOM installations no typical breakdowns exist since each activity is performed.

Past and Future

An historical survey of unit electrical cost for five years has been made for a regionally located installation. From this data cost projections have been made and are summarized below.

<u>Installation</u>	<u>Growth Data Compounded Annually (1970-1975)</u>	<u>1975 Cost Mills/Kwhr</u>	<u>1986 Cost* Mills/Kwhr</u>
Ft. Devens, MA	18%	33.24	85.77
Ft. Meade, MD	21	26.40	79.18
Ft. Bragg, NC	23	20.67	68.45
Ft. Lewis, WA	6	6.02	8.33
Ft. Hood, TX	12	14.36	27.25
Ft. Carson, CO	8	13.46	20.72

References

1. Characterization of Energy Usage on Military Installations, USAFESA-RTD, 22 October 1974.
2. Facilities Engineering Annual Summary of Operation, FY70 through FY75.

TRADOC

<u>Installation</u>	<u>Total Kwhr Consumption/Yr X10³</u>	<u>Cost \$</u>	<u>M111/Kwhr m111=\$.001</u>	<u>Avg Kwhr Consumption/hr (8760 hr/yr)</u>	<u>Population</u>	<u>Kwhr/person/yr</u>	<u>Cents/Watt</u>
Ft Knox, KY	127,430	\$1,499,435	11.77	14546	44,077	2891	10.31
Ft Benning, GA	151,084	2,991,794	19.80	17247	37,065	4076	17.35
Ft Bliss, TX	128,337	2,222,369	17.32	14650	36,575	3508	15.17
Ft L. Wood, MO	102,460	1,139,649	11.12	11696	31,307	3272	9.74
Ft Dix, NJ	73,659	1,723,952	23.40	8408	19,123	3851	20.50
Ft Sill, OK	100,384	849,534	8.46	11459	29,329	3422	7.41
Ft Gordon, GA	94,424	1,864,652	19.75	10778	22,386	4217	17.30
Ft Jackson, SC	94,671	2,140,331	22.61	10807	25,960	3646	19.80
Ft Belvoir, VA	86,775	1,633,399	18.82	9905	17,811	4871	16.49
Ft Rucker, AL	86,040	1,637,147	18.39	9821	20,998	4097	16.67
Ft Eustis, VA	67,256	1,205,937	17.93	7677	15,714	4280	15.71
Ft Lee, VA	51,649	931,085	18.03	5896	15,662	3297	15.79
Ft Leavenworth, KS	50,857	777,603	15.29	5805	11,956	4253	13.39
USMA, NY	64,640	2,148,028	33.23	7378	14,728	4388	29.11

Table I

FORSCOM

<u>Installation</u>	<u>Total Kwhr Consumption /yr x 10³</u>	<u>Cost \$</u>	<u>Mill/Kwhr Mill=\$.001</u>	<u>Avg Kwhr Consumption /hr (8760 hr/yr)</u>	<u>Population</u>	<u>Kwhr/person/yr</u>	<u>Cents/Watt</u>
Ft. Bragg, NC	221,650	4,582,265	20.67	25302	41,695	5315.985	18.11
Ft. Meade, MD	218,108	5,758,742	26.40	24898	45,216	4823.690	23.13
Ft. Hood, TX	191,809	2,753,805	14.36	21896	61,876	3099.803	12.58
Ft. Lewis, WA	140,556	845,937	6.02	16045	38,011	3697.771	5.27
Ft. Campbell, KY	123,017	1,615,123	13.13	14043	35,056	3509.156	11.50
Ft. Wainwright, AK	73,520	1,846,756	25.12	8392	6,612	1119.177	22.01
Ft. Richardson, AK	68,351	665,364	9.73	7802	12,068	5663.821	8.53
Ft. Carson, CO.	72,059	970,225	13.46	8225	41,074	1754.370	11.79
Ft. Riley, KS	80,141	1,256,530	15.68	9148	29,218	2742.863	13.74
Ft. Ord, CA	80,800	1,301,863	16.11	9223	34,458	2344.883	14.11
Ft. Sam Houston, TX	110,348	2,264,581	20.52	12596	20,440	5398.630	17.98
Schofield Barracks, HI	144,721	2,548,113	17.61	16520	25,725	5625.694	15.42
Ft. Devens, MO. Presidio of S.F. CA	46,136	1,533,726	33.24	5266	15,604	2956.677	29.12
Ft. Sheridan, IL	57,452	921,853	16.05	6558	14,072	4082.717	14.06
	61,064	1,141,376	18.69	6970	16,301	3746.027	16.37
<u>HSC</u>							
Ft. Detrick, MD	59,063	1,179,939	19.98	6742	3,098	19064.880	17.50
Walter Reed Army Medical Ctr, DC	55,668	1,613,288	28.98	6354	8,893	6259.754	25.39
<u>ACC</u>							
Ft. Huachuca, AZ	58,158	1,458,169	25.07	6639	16,411	3543.842	21.96

Table II

DARCOM

<u>Installation</u>	<u>Total Kwhr Consumption/Yr X10³</u>	<u>Cost \$</u>	<u>Mill/Kwhr mill-\$.001.</u>	<u>Avg Kwhr Consumption/hr (8760 hr/yr)</u>	<u>Population</u>	<u>Kwhr/person/yr 50% of total Kwhr</u>	<u>Cents/Matt</u>
Holston AAP, TN	90,950	1,591,327	17.50	10382	2,025	22,456	15.33
Radford AAP, VA	125,779	3,889,782	30.93	14358	4,155	15,135	27.09
Restone Arsenal, AL	263,302	3,095,068	11.75	30057	23,875	5,514	10.29
Aberdeen PG, MD	122,655	3,419,489	27.88	14001	26,015	2,357	24.42
Joliet AAP, IL	55,449	1,202,115	21.68	6329	1,576	17,591	18.99
Picatinny Arsenal, NJ	39,653	1,115,033	28.12	4526	6,001	3,304	24.63
Ft Monmouth, NJ	68,006	1,783,900	26.23	7763	16,023	2,122	22.98
Badger AAP, WI	21,406	392,341	18.33	2443	411	26,041	16.06
Rock Island Arsenal, IL	52,954	871,771	16.46	6044	8,015	3,303	14.42
Volunteer AAP, TN	43,337	537,674	12.40	4747	470	46,104	1.13
Twin Cities AAP, MN	57,467	987,827	17.19	6560	2,097	13,702	15.06

TABLE III

Consumption in Mwhr/yr

FORSCOM

	<u>Troop Housing</u>	<u>Family Housing</u>	<u>Admin & Training</u>	<u>Medical</u>	<u>Community Service & Commercial</u>	<u>Storage</u>	<u>Maintenance, Production & Miscellaneous</u>
Ft. Bragg, NC	66,495	79,794	26,598	8,866	17,732	8,866	13,299
Ft. Meade, MD	65,432	78,519	26,173	8,724	17,449	8,724	13,086
Ft. Hood, TX	57,543	69,051	23,017	7,672	15,345	7,672	11,509
Ft. Lewis, WA	42,167	50,600	16,867	5,672	11,244	5,622	8,433
Ft. Campbell, KY	36,905	48,286	14,762	4,921	9,841	4,921	7,381
Ft. Wainwright, AK	22,056	26,467	8,822	2,941	5,882	2,941	4,911
Ft. Richardson, AK	20,505	24,606	8,202	2,734	5,468	2,734	4,101
Ft. Carson, CO	21,618	25,941	8,647	2,882	5,765	2,882	4,324
Ft. Riley, KS	24,024	28,851	9,617	3,206	6,411	3,206	4,808
Ft. Ord, CA	24,240	29,088	9,696	3,232	6,464	3,232	4,848
Ft. Sam Houston, TX	33,104	39,725	13,242	4,414	8,828	4,414	6,621
Schofield Barracks, HA	43,416	52,100	17,367	5,788	11,578	5,788	8,683
Ft. Devens, MA	13,841	16,609	5,536	1,845	3,691	1,845	2,708
Presidio of S.F. CA	17,236	20,683	6,894	2,298	4,596	2,298	3,447
Ft. Sheridan, IL	18,319	21,983	7,328	2,443	4,885	2,443	3,664

Table IV

Consumption in Mwhr/yr

TRADOC

	<u>Troop Housing</u>	<u>Family Housing</u>	<u>Admin & Inq</u>	<u>Medical</u>	<u>Community Service & Commercial</u>	<u>Storage</u>	<u>Maintenance Production & Miscellaneous</u>
Ft Knox, KY	38,229	45,875	15,292	5,097	10,194	5,097	7,646
Ft Benning, GA	45,325	54,390	18,130	6,043	12,067	6,043	9,065
Ft Bliss, TX	38,501	42,201	15,400	5,133	10,267	5,133	7,700
Ft Leonard Wood, MO	30,738	36,886	12,292	4,098	8,197	4,098	6,198
Ft Dix, NJ	22,098	26,517	8,839	2,946	5,893	2,946	4,420
Ft Sill, OK	30,115	36,138	12,046	4,015	8,030	4,015	6,023
Ft Gordon, GA	28,327	33,993	11,331	3,776	7,554	3,776	5,665
Ft Jackson, SC	28,385	34,062	11,354	3,785	7,569	3,785	5,677
Ft Belvoir, VA	26,033	31,239	10,413	3,471	6,942	3,471	5,207
Ft Rucker, AL	25,812	30,974	10,325	3,442	6,883	3,442	5,162
Ft Eustis, VA	20,177	24,212	8,070	2,690	5,380	2,690	4,035
Ft Lee, VA	15,495	18,594	6,198	2,066	4,132	2,066	3,099
Ft Leavenworth, KS	15,257	18,309	6,103	2,034	4,069	2,034	3,051
West Point, NY	19,392	23,270	7,757	2,586	5,171	2,586	3,878

Table V

Consumption in Mwhr/yr

HSC & ACC

	<u>Troop Housing</u>	<u>Family Housing</u>	<u>Admin & Ing</u>	<u>Medical</u>	<u>Community Service & Commercial</u>	<u>Storage</u>	<u>Maintenance Production & Miscellaneous</u>
Ft Detrick, MN	17,720	21,263	7,088	2,363	4,725	2,363	3,543
Walter Reed, DC	16,700	20,040	6,680	2,227	4,453	2,227	3,340
Ft Huachuca, AR	17,447	20,937	6,980	2,326	4,653	2,326	3,489

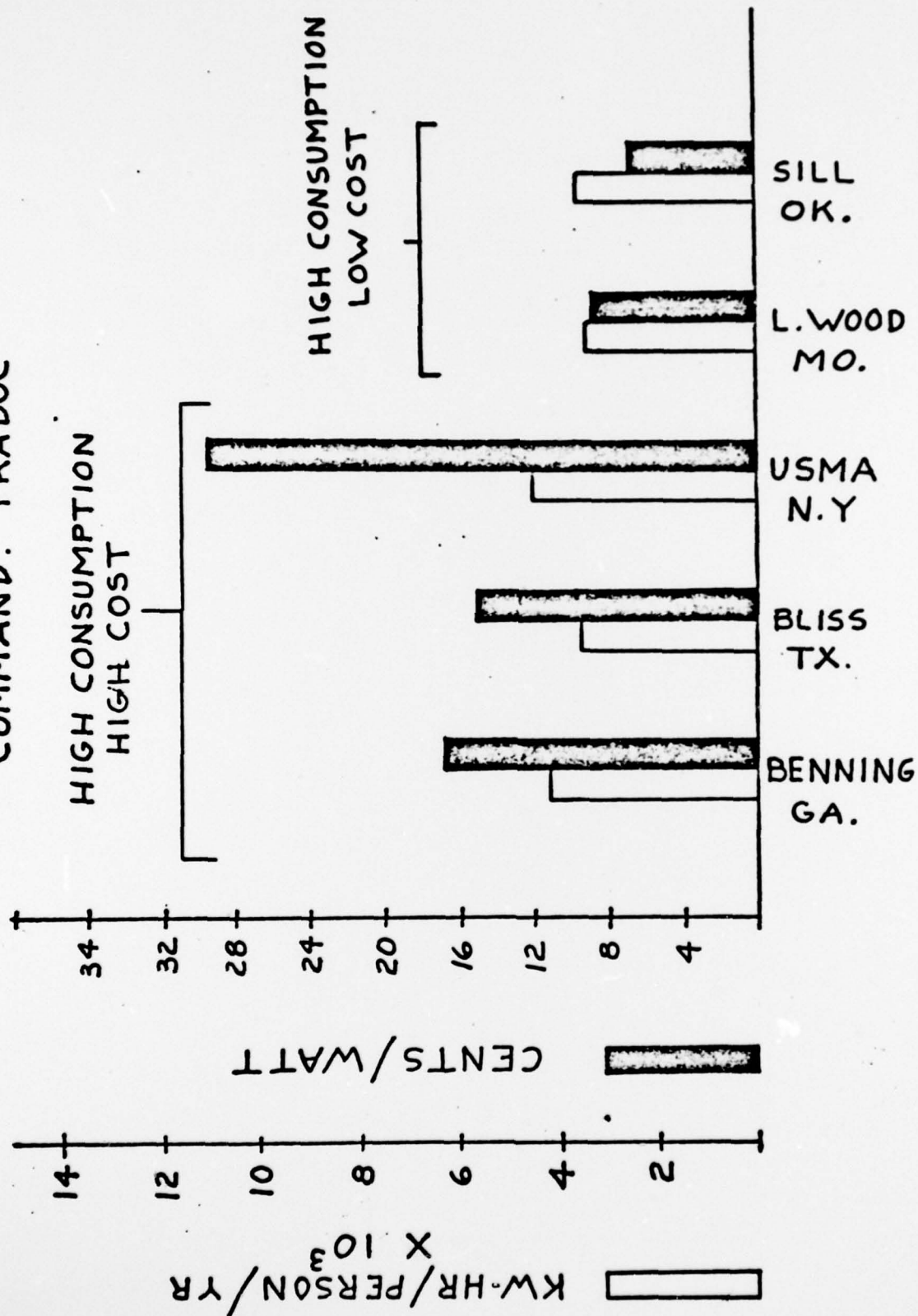
Table V (Cont.)

ELECTRICAL USAGE

TRADOC

INSTALLATION	YEARLY KW-HR X 1000	COST \$	MILLS/ KW-HR MILL = \$.001	AVG. KW-HR YEAR 8760 HR/YR.	CENT/ WATT
Ft. BENNING GA.	151,084	2,991,794	19.80	17247.	17.35
Ft. BLISS TX.	128,337	2,222,369	17.32	14650.	15.17
USMA N. Y.	64,640	2,148,028	33.23	7378.	29.11
Ft. L. WOOD M O.	102,460	1,139,649	11.12	11696.	9.74
Ft. SILL OK.	100,384	849,534	8.46	11459	7.41

COMMAND: TRADOC

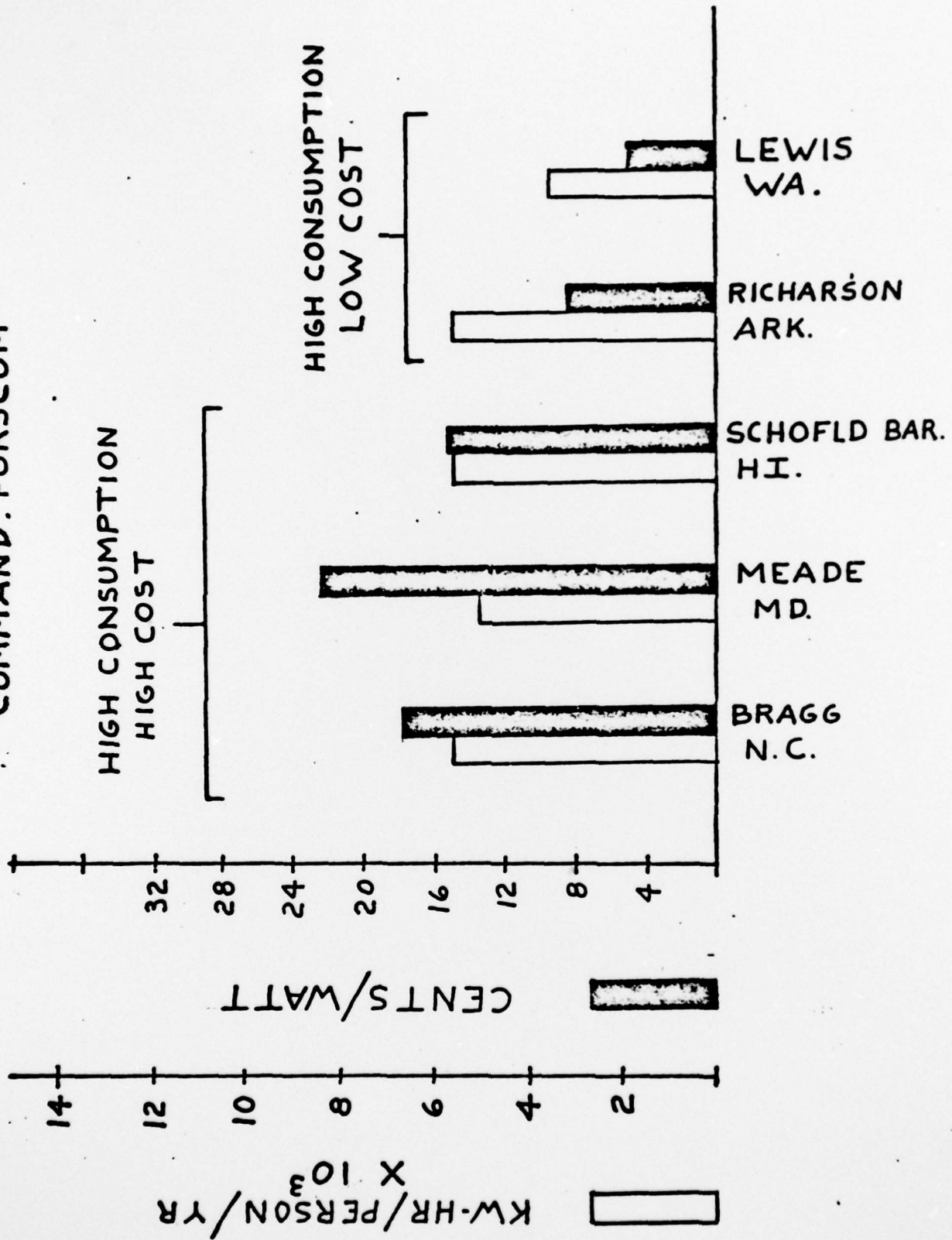


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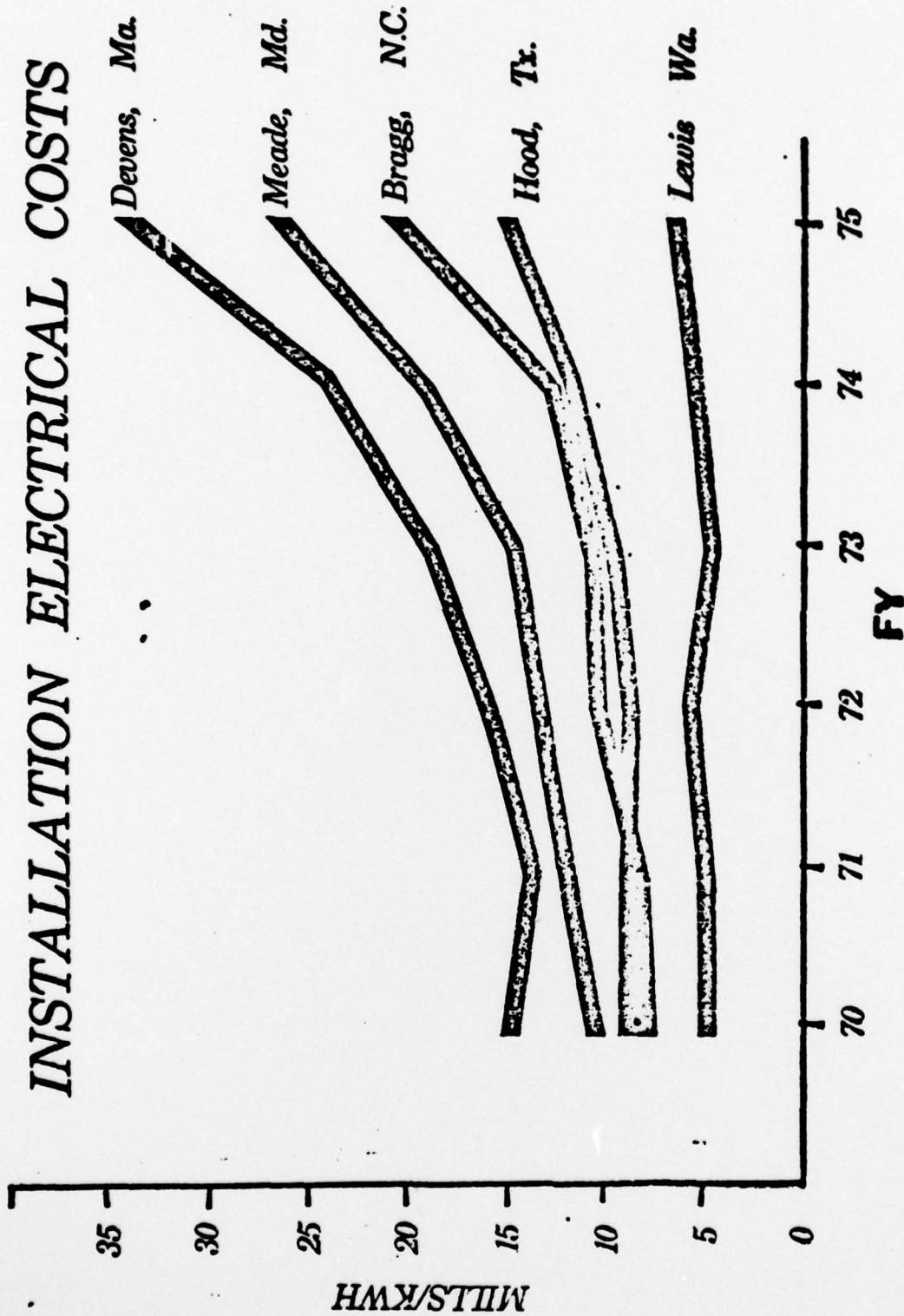
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INSTALLATION	YEARLY KW-HR X 1000	COST \$	MILLS/ KW-HR MILL = \$.001	AVG. KW-HR YEAR 8760 HR/YR	CENTS/ WATT
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Ft. MEADE MD.	218,108	5,758,742	26.40	24898.17	23.13
SCHOFD. BK. HA.	144,721	2,548,113	17.61	16520.66	15.42
Ft. RICHARSON ARK.	68,351	655,364	9.73	7802.62	8.53
PRESIDIO S.F., CA.	57,452	921,853	16.05	6558.45	14.06

COMMAND: FORSCOM



INSTALLATION ELECTRICAL COSTS



CENSUS REGIONS

