

Since this type of pump is used almost exclusively for the pumping of water from wells and there was no substantial reduction in the use of other types of pumps, it can be reasoned that the trend is toward turbine pumps and the increased number of turbine pumps is indicative of new developments since 1930 involving pumped wells. Although turbine pumps lead in total number and require 51.1 percent of the total installed motive power, centrifugal pumps exceed in capacity with 55.4 percent of the total. The average lift for centrifugal pumps is 29 feet compared with 70 feet for the turbines. This higher lift largely accounts for the greater horsepower required by the turbine installations. It is notable that the total number of centrifugal pumps decreased slightly. However, the total capacity increased 10.1 percent and the installed horsepower decreased 17.8 percent, indicating replacements of machinery of higher efficiency.

All States show a marked decade increase in the installation of pumping equipment, with the exception of Utah (-11.1 percent). California, with 52,016 pumps or 66.1 percent of the total installations ranks first, followed in order by Texas, 6.1 percent, and Colorado and Nebraska, each with 3.6 percent of the total. Marked increases in reported average lifts are shown in Arizona and Texas.

Pumping plant installations in the principal drainage basins, exclusive of Red River and Whitewater Draw and Vamori Wash, increased, with the exception of the Great Basin (-48.1 percent). The Sacramento-San Joaquin Delta and tributary basins contain 44.3 percent of the total irrigation pumps in the 19 States. Other Pacific Ocean basins exclusive of the Colorado, Columbia, and Klamath Basins, rank second, with 21.1 percent, and the Missouri River Basin ranks third, with 7.6 percent of the total number of pumps installed. However, the Gulf of Mexico streams other than the Mississippi and Rio Grande rank third in installed horsepower and second in capacity of pumps.

TABLE 15.—PUMPING EQUIPMENT—BY KIND OF POWER, BY KIND OF PUMP, BY STATES, AND BY PRINCIPAL DRAINAGE BASINS: 1940, 1930, AND 1920

(For the 17 western States and Arkansas and Louisiana)

ITEM (For definitions and explanations, see text)	CAPACITY OF PRIME MOVERS					PUMPS												
	1940	1930	1920	Pro-portion of total, 1940	In-crease or de-crease (-) 1930-1940	Total					Capacity					Average pumping lift		
						1940	1930	1920	Pro-portion of total, 1940	In-crease or de-crease (-) 1930-1940	1940	1930	1920	Pro-portion of total, 1940	In-crease or de-crease (-) 1930-1940	1940	1930	1920
Total (19 States)	1,762,687	1,283,419	748,971	100.0	37.3	78,528	61,445	33,804	100.0	27.8	75,802,998	57,244,859	56,275,005	100.0	32.4	51	51	41
BY KIND OF POWER																		
Electric motor	1,118,024	876,166	289,018	63.4	27.6	50,597	44,165	12,743	64.5	14.6	43,527,320	37,365,179	13,311,435	57.4	16.5	55	57	50
Internal-combustion engine	588,123	265,736	259,613	33.4	121.3	21,533	15,012	15,691	27.4	65.5	20,532,240	10,891,855	10,461,857	27.1	98.5	42	37	35
Other	56,540	50,343	125,429	3.2	12.3	1,213	874	2,515	1.5	38.8	1,842,277	3,245,151	7,986,226	2.4	-45.2	63	40	37
Mixed	(1)	91,174	74,911			5,185	3,394	3,055	6.6	52.8	9,901,161	5,742,674	4,515,487	13.1	72.4	50	45	46
BY KIND OF PUMP																		
Centrifugal	597,067	726,301	581,274	33.9	-17.8	34,447	54,803	26,019	43.9	-1.0	42,036,292	58,193,371	29,250,062	55.4	10.1	29	36	33
Turbine	901,137	302,294	24,390	51.1	198.1	38,204	13,370	677	48.6	185.7	30,746,028	8,655,500	525,728	40.6	255.2	70	75	84
Plunger	17,553	17,503	(2)	1.0	0.3	4,887	2,687	(2)	6.2	70.5	299,420	272,174	(2)	0.4	10.0	80	101	(2)
Other and mixed	246,930	237,321	143,307	14.0	121.5	990	10,405	27,108	1.3	-79.6	2,721,158	10,123,805	86,499,215	3.6	-55.8	40	65	268
BY STATES																		
Arizona	102,733	57,633	22,014	5.8	78.3	1,969	1,364	1,001	2.5	44.4	2,992,986	2,125,293	1,048,030	3.9	40.8	60	46	44
Arkansas	76,048	66,980	58,332	4.3	13.5	1,633	1,206	1,121	2.1	35.4	2,013,697	1,775,788	1,654,097	2.7	13.4	61	68	50
California	968,351	820,787	386,200	54.9	18.0	52,016	47,994	24,134	66.1	8.4	59,147,470	35,240,589	16,773,692	51.7	17.8	55	53	41
Colorado	49,157	11,204	8,635	2.8	338.7	2,618	540	435	3.6	421.9	2,263,375	437,250	299,728	3.0	417.6	32	25	23
Idaho	44,537	33,754	28,364	2.5	31.9	675	465	232	0.9	45.2	2,719,905	2,113,513	1,397,681	3.6	28.7	28	32	29
Kansas	26,796	6,221	6,946	1.5	330.7	1,259	312	288	1.6	303.5	1,231,482	393,526	297,975	1.6	212.9	35	26	30
Louisiana	85,574	86,413	85,628	4.9	-1.0	2,403	2,000	1,941	3.1	20.2	6,453,487	5,914,799	4,968,686	8.5	9.1	32	37	32
Montana	29,110	9,095	10,341	1.7	220.1	660	233	299	0.9	191.8	1,309,014	523,494	455,231	1.7	150.1	21	22	20
Nebraska	53,572	10,991	959	3.0	387.4	2,648	636	54	3.6	347.8	2,528,669	536,752	73,686	3.3	371.1	32	29	24
Nevada	2,262	2,671	409	0.1	-15.3	196	173	72	0.2	13.3	141,065	115,648	35,266	0.2	22.0	51	51	22
New Mexico	40,110	14,483	8,488	2.5	178.9	1,559	738	491	2.0	111.2	1,309,005	555,063	304,789	1.7	135.8	44	40	40
North Dakota	1,253	218	2,068	0.1	480.1	83	13	10	0.1	538.5	104,158	24,900	51,250	0.1	318.3	17	24	38
Oklahoma	1,037	229	184	0.1	352.8	116	30	26	0.1	286.7	59,280	8,855	7,668	0.1	589.5	36	33	59
Oregon	29,527	21,257	13,769	1.7	38.9	2,265	1,157	614	2.9	95.8	1,510,958	1,022,213	600,045	2.0	47.8	27	27	28
South Dakota	2,060	92	498	0.1	(3)	127	8	25	0.2	(3)	103,060	4,027	23,320	0.1	(3)	20	27	21
Texas	195,061	95,933	80,511	11.1	103.3	4,754	2,028	1,641	6.1	134.4	9,916,225	6,494,999	6,825,998	13.1	52.7	89	55	45
Utah	14,216	11,361	11,392	0.8	24.9	409	480	291	0.5	-11.1	855,862	877,942	783,588	1.1	-4.8	35	36	25
Washington	37,131	33,167	22,929	2.1	11.9	2,468	2,023	1,059	3.2	23.0	953,751	993,303	656,552	1.3	-4.0	47	59	80
Wyoming	4,152	912	1,304	0.2	355.3	230	65	70	0.3	253.8	209,559	86,905	59,725	0.3	141.1	30	21	31
BY PRINCIPAL DRAINAGE BASINS																		
Red River (of the North)	274	153		(*)	79.1	16	8		(*)	100.0	26,045	20,400		(*)	27.7	21	13	
Missouri River	117,173	25,788	18,329	6.8	354.4	5,994	1,279	689	7.6	368.6	5,733,010	1,343,545	800,218	7.6	328.7	52	28	22
Mississippi River, ex-clusive of Missouri River	145,750	78,378	73,739	8.3	86.0	4,190	1,804	1,715	5.3	132.3	4,275,330	2,418,238	2,237,441	5.6	78.8	57	54	45
Gulf of Mexico streams, other than Mississippi River and Rio Grande	208,930	140,298	136,953	11.9	48.9	5,697	3,525	3,208	7.3	61.6	11,846,141	9,929,951	9,202,748	15.4	30.4	50	46	37
Rio Grande	76,569	52,910	30,941	4.3	44.7	2,355	1,099	709	3.0	114.1	5,486,952	3,981,586	2,716,936	7.2	41.4	42	41	42
Colorado River	117,403	62,050	27,406	6.7	89.2	2,640	1,220	1,128	3.4	116.4	5,616,220	2,367,101	1,195,680	4.8	52.8	54	44	42
Whitewater Draw and Vamori Wash	2,070	2,025	2,403	0.1	2.2	144	215	209	0.2	-33.0	63,344	59,507	73,987	0.1	6.4	57	48	44
Great Basin	39,973	62,344	20,603	2.3	-35.9	1,448	2,788	820	1.8	-48.1	1,514,746	3,205,814	1,033,964	2.0	-52.8	71	67	41
Columbia River	105,911	77,271	62,451	6.0	37.1	4,439	3,434	1,745	5.7	29.3	4,609,882	3,593,854	2,522,910	6.1	28.3	39	47	50
Klamath River	6,854	6,522	3,996	0.4	5.1	224	123	83	0.3	82.1	506,460	508,965	174,184	0.7	-0.5	26	33	25
Sacramento-San Joaquin Delta and tributary streams	552,193	468,661	201,074	31.3	17.8	34,831	33,129	14,849	44.3	5.1	29,694,592	23,856,244	11,584,371	39.1	24.5	42	42	32
Pacific Ocean streams, excl. of Gulf of Cali-fornia streams, Columbia and Klamath Rivers, and Sacramento-San Joaquin Delta and tributary streams	389,587	307,019	171,076	22.1	26.9	16,552	12,821	6,649	21.1	29.1	8,630,296	7,059,634	4,732,586	11.4	22.2	80	79	59

1 For 1940 mixed types of motors were segregated and assigned to the proper types. 1930 and 1920 data include "Not reported." 2 Data for "Plunger" pumps included with "Other and mixed" pumps for 1920. 3 Percent not shown when more than 1,000. 4 Less than one-tenth of 1 percent. 5 Data for Censuses of 1930 and 1920 are for Whitewater Draw and unidentified tributaries, and do not include the independent basin, Vamori Wash.