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Modern Plant Yearbook Issue

MODERN PLANT SURVEY 37

New plants of 1955: Design trends, tabulated data on more than 400 steam and hydro units on order, being built, just completed

POWER'S MODERNIZATION AWARDS. 59

Field-tested profit-making ideas. Listing of awards for modernization accomplishment

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Source book of power-field equipment and services: over 700 products, 1800 firms

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Former manufacturers of power equipment: names and addresses of successor companies

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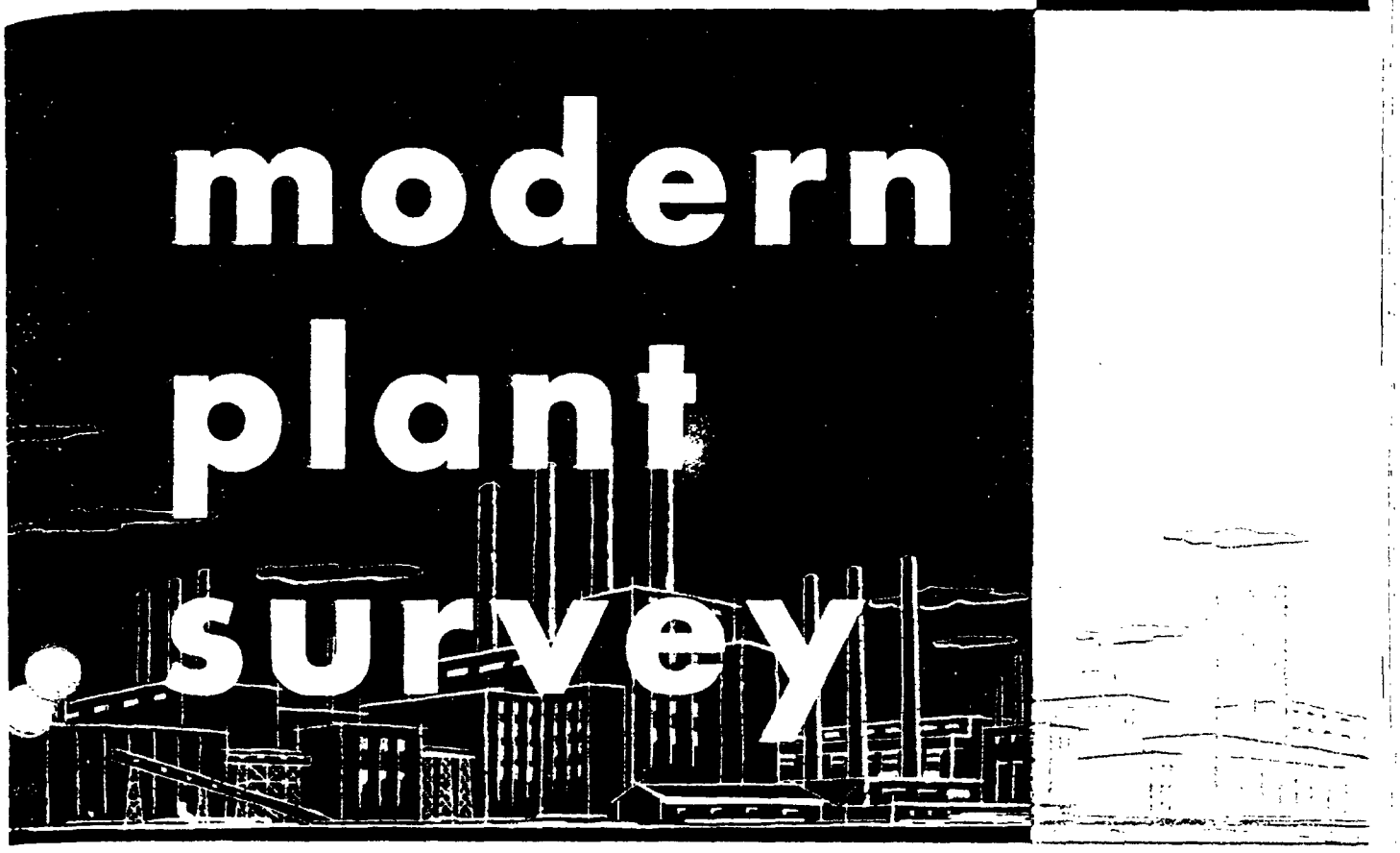
New Equipment: A review of problem-solving products, and cards for ordering more info

New Bulletins: Handy guide to literature and catalogs available at drop of a card

Power *presents its* **1955**

modern plant survey



These pages bring you the most data available anywhere on design features of steam and hydro units planned, under construction and starting operation. Because of the way we must compile facts, the survey does not include all current programs, nor does it consist only of current construction. Let us tell you how the job's done and point out listing limitations—so you can use the survey effectively.

• **HOW WE DO THE JOB.** As a continuing service, POWER'S editors assemble news of installations planned or ordered. We send questionnaires to individual companies asking for project details. The replies go into the tables, compiled at yearly intervals—last survey appeared in the Mid-September 1954 issue.

• **ITS LIMITATIONS.** In the nature of things, you can see these tabulations can't be complete. Nor can published lists correspond exactly in point of time with actual installations or announcements of them. Data may appear in the tables well before construction starts, or if engineering is delayed, may not appear until long after a project is announced. Revised listings duplicated from previous surveys are so marked.

• **HOW TO USE SURVEY.** Being representative of design and construction in progress in 1954 and early 1955, the following tables give useful information on general trends. These trends appear on the pages preceding the tables.

• **HOW NOT TO USE IT.** Remember, these are not complete lists, only extensive samples. Don't use survey facts to get total figures on capacities, sales, etc., or to make comparisons where incompleteness distorts results.

MID-SEPTEMBER 1955

1955 Design Survey: Typical Industrial

Compiled by H P Kalien, Assistant Editor

Company & Location	Consulting Engineers	First operation, new units	Operating steam pressure, psig	Operating steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Boiler & WW surface, 1000 sq ft	BOILERS: Superheater surface, 1000 sq ft	Furnace volume, 1000 cu ft	Heat release, 1000 btu per cu ft per hr	Economizer surface per boiler, 1000 sq ft	Air-heater surface per boiler, 1000 sq ft	Air-heater type	Dust-collector type	Firing
600 PSI AND ABOVE																
Erie Mining Co, Taconite Harbor, Minn.	Anaconda Copper Mining Co	1957	1500	1000	2	560	CE	16.0	36.7	44	17.3	20.3	56.9	Re	Me	P
Reserve Mining Co, Silver Bay, Minn.	Sargent & Lundy	7-55	1325	1005	1	450	BW	9.3	23.3	–	17.3	8.5	129.6	{Re / Pl}	Me	P
M&O Paper Co Int'l Falls, Minn.	J F Pritchard	9-56	1290	800	1	240	CE	17.2	4.8	1.4	22.4	5.4	28.6	Re	Me	P
Sherritt Gordon Mines Ltd, Ft. Sask., Alberta	Chemical Constr Corp	5-54	900	750	2	150	CE	13.1	1.0	6.3	31.3	–	22.7	Tu	–	G
Boston Naval Shipyard, Boston, Mass.	Chas T Main Inc	9-54	875	825	1	150	RS	18.3	–	10.3	17.7	–	25.5	Re	Me	P
Kalamazoo Vegetable Parchment Co, Parchment, Mich.		11-55	860	825	1	200	CE	21.3	6.0	15.8	15.4	–	31.7	Re	Me	P
Bowaters Southern Paper Corp, Calhoun, Tenn.	United Engrs & Constructors	8-56	850	900	1	350	BW	28.0	14.0	22.3	21.4	–	38.2	Re	–	O, G
[redacted]	[redacted]	3-53	850	820	2	225	FW	24.6	4.6	8.6	33.7	–	34.5	Re	–	G
Michigan Carbon Co, Battle Creek, Mich.	J Hoad & Assoc	6-55	760	750	1	140	BW	17.1	4.0	7.4	25.8	9.0	–	–	Me	SS(317)
El Paso Natural Gas Co, Bloomfield, N Mex.		10-53	675	600	3	47	Vo	–	–	–	–	–	–	–	–	G
Chevrolet, Detroit Forge Div, GMC, Detroit, Mich.	Albert Kahn Assoc	6-55	650	725	1	160	RS	19	2.8	10.5	20.8	–	20.9	Re	Me	P
Riverside Cement Co, Oro Grande, Calif.	Bechtel Corp	1-55	650	825	5	20	CE	7.0	1.2	–	–	2.9	–	–	Me, E	WH
					2	40	CE	6.3	–	2.0	30.5	–	2.7	Tu	–	O
Shell Oil Co, Anacortes, Wash.	Bechtel Corp	11-55	650	750	2	175	RS	18.5	–	9.1	26.1	–	18.1	Tu	–	O, G
					1	175	CE	16.0	–	7.2	39.2	13.7	–	–	Me[9]	PF
Barrett Div, Allied Chem & Dye Corp, Phila, Pa.		2-54	{625[14] / 250[15]}	{750[14] / 500[15]}	2	230	BW	19.3	1.2	8.8	31.0	8.3	–	–	–	O, G
Cooperative Farm Chem Assn, Lawrence, Kansas	Girdler Co	7-54	625	750	2	150	Vo	16.3	–	–	–	–	–	–	–	O, G
Milwaukee County Inst, Wauwatosa, Wis.	Pfeifer & Shultz	10-55	625	750	3	110	UI	14.2	3.2	6.0	22.0	3.9	–	–	Me	SS(243)
Pennsylvania RR, Altoona, Pa.	Gibbs & Hill, Inc	1-55	625	635	3	60	RS	7.2	1.1	2.7	29.9	3.3	–	–	Me	SS(156)
Scott Paper Co, Chester, Pa.		12-54	620	750	1	210	CE	17.4	–	–	28.6	–	32.0	Re	Me	O
Southland Paper Mills, Lufkin, Tex.		5-56	610	750	2	175	BW	12.9	–	8.1	–	–	17.9	Tu	–	PF
Commercial Solvents Corp, Sterlington, La.		6-55	605	750	1	110	RS	11.0	2.0	5.5	29.9	–	10.0	Tu	–	G
Central Fibre Products Co, Quincy, Ill.	H M Wilson Co	9-55	{600[14] / 185[15]}	{550[14] / 450[15]}	2	90	CE	3.4	–	7.0	–	4.5	–	–	–	{SS(300) / O, G}
			600	685	1	100	CE	9.0	–	–	–	4.2	–	–	–	{TG(321) / TG(76)}
Container Corp of America, Carthage, Ind.		–	125	353	1	30	EC	3.2	–	–	–	–	–	–	–	
P H Glatfelter Co, Spring Grove, Ont.	H M Wilson Co	6-56	600	650	1	240	CE	29.2	–	18.5	17.6	–	32.0	Re	Me	P
Marathon Corp, Rothschild, Wis.		1956	600	750	1	80	–	–	–	–	–	–	–	Tu	Me	SS
Texas Eastman Co, Longview, Tex.		12-54	600	750	1	150	CE	14.7	–	7.2	28.8	–	20.2	Tu	–	G
BELOW 600 PSI																
Linde Air Products, Long Beach, W Va.	Day & Zimmerman	6-55	535	625	2	40	CE	6.2	–	2.3	25.0	2.0	14.3	Tu	Me	SS
Johns-Manville Corp, Lompoc, Calif.		3-55	500	Sat	2	12	CE	1.9	–	–	–	–	–	–	–	PF
Sun Oil Co, Toledo, Ohio		3-55	500	600	{1 / 1}	{220 / 70}	{BW / BW}	–	–	–	–	–	–	–	–	O, G[16]
Great Lakes Paper Co Ltd, Ft Wm, Ont.	E & B Cowan	1-56	450	650	1	200	CE	17.2	–	–	24.8	–	63.0	Tu	–	P
Sun Oil Co, Marcus Hook, Pa.		4-55	450	Sat	1	60	BW	8.5	–	–	–	2.0	–	Tu	–	PF
[redacted]		9-53	{450 / 450 / 180}	{550 / Sat / Sat}	{2 / 1 / 1}	{25 / 25 / 50}	{Wi / FW / JI}	{2.4 / 3.1 / –}	{1.9 / – / –}	–	–	–	–	–	–	PF
Mendota State Hospital, Madison, Wis.	Battey & Childs	11-55	{425[14] / 135[15]}	{700[14] / 425[15]}	2	50	UI	7.2	0.2	2.3	–	{3.2[14] / 2.5[15]}	–	–	–	TG(172)
Refined Syrups & Sugars, Inc, Yonkers, N Y.	Anderson-Vreeland	7-55	{425[14] / 270[15]}	{750[14] / 455[15]}	1	125	CE	–	–	7.0	21.9	–	8.5	Re	Me	P, O
Northern Chemical Ind, Inc, Searsport, Me.	Girdler Co	1-56	415	750	1	154	EC	13.2	–	–	–	–	–	–	–	O
Freeport Sulphur Co, Tidewater, La.		2-55	400	550	3	56	BW	–	–	–	–	–	–	–	–	G
Grace Chemical Co, Memphis, Tenn.		10-54	400	750	2	110	CE	–	–	–	–	–	–	–	–	G
Rock Island Millwork Co, Rock Is, Ill.	Pfeifer & Shultz	6-55	{300[14] / 150[15]}	Sat	1	30	BW	–	–	–	–	–	–	–	–	SS(96)
Standard Oil Co of B C Ltd, N Burnaby, Can.		11-54	400	450	2	30	CE	–	–	–	–	–	–	–	–	O, G
Colonial Sugars Co, Gramercy, La.		8-55	300	475	1	77	RS	9.4	0.3	2.9	–	–	–	–	–	PF
Inland Steel Co, E Chicago, Ind.		11-54	300	700	1	200	CE	–	–	–	–	–	–	–	–	O[18]
Univ of Missouri, Columbia, Mo.	Burns & Roe, Inc	5-55	290	623	2	75	Wi	10.3	1.5	4.1	25.3	3.3	–	–	–	SS(300)
Elliott Co, Ridgway, Pa.		1-54	280	435	1	35	BW	5.4	–	–	35.9	–	–	–	–	PF, SS(93)
Arnold, Hoffman & Co Inc, Dighton, Mass.	Jenks & Ballou	7-54	275	514	1	55	RS	2.3	0.4	2.6	–	–	3.9	Tu	–	O
Fairfield State Hospital, Newtown, Conn.	Westcott & Mapes	11-55	260	450	2	40	Bi	6.2	–	–	–	–	–	–	–	PF
Phelps Dodge Copper Products Corp, Yonkers, N Y.	F H McGraw	2-55	260	Sat	2	12.5	CE	–	–	–	–	–	–	–	–	O
Rock Hill Print'g & Finishing Co, Rock Hill, S C.	Lockwood Greene	4-55	260	Sat	1	150	RS	18.3	–	7.2	24.7	3.4	–	–	Me	SS(267)
American Butyrics & Alcohol Co, Cincinnati, Ohio		6-54	250	Sat	2	22.5	CE	–	–	–	–	–	–	–	–	PF
Pioneer Hanna Coke Div, Buffalo, N Y.	Zack D Hinds	12-54	250	505	1	50	UI	3.1	–	2.5	30.0	1.5	–	–	–	TG(185)
J P Lewis Co, Beaver Falls, N Y.	Zack D Hinds	11-53	250	505	1	35	BW	4.1	–	1.5	29.3	–	1.2	Tu	–	SS(93)
McCall Frontenac Oil Co Ltd, Edmonton, Alberta		4-55	250	500	1	75	FWL	10.4	0.4	4.4	22.8	–	–	–	–	O, G
Memorial Hospital, Chatham Co, Savannah, Ga.	Thomas & Hutton	9-55	250	500	2	25	BW	–	–	–	–	–	–	–	–	O, G
Tidewater Oils Co, Barrington, R I.	Weymouth Kirkham, Walker, Smith & Smith	3-56	250	–	1	20	CE	2.3	–	2.6	34.0	–	–	–	–	O, G
St Marys Hospital, Rochester, Minn.	Maguolo & Quick	1-54	250	550	1	40	RS	3.9	–	1.9	–	2.9	–	–	–	O, G
Domestic Products Co, Cleveland, Ohio		7-55	250	Sat	1	5.2	CE	0.4	–	–	–	–	–	–	–	PF
U S Army, Whittier, Alaska	Bechtel Corp	9-55	250	400	1	40	EC	4.1	0.7	–	32.0	–	0.3	Tu	–	O

AC – Arms-Chambers Mfg Co
Ag – Agnitarty
Agit – Agitated Separator
AE – Automatic extraction
Al Br – Aluminum brass
As – Asbestos
AsCu – Arsenical copper
BB – Brown Boveri Corp
Bi – Bigelow Co
BW – Babcock & Wilcox Co
C – Coal, bituminous
CE – Combustion Engineering, Inc
Co – Condensing
D – Damper
De – Demineralizer
Di – Differential
Dr – Dry type
Du – Dual drive
E – Exam. static
EC – Erie City Iron Works
EI – Elliott Co
Ev – Evaporator
FW – Foster Wheeler Corp
FWL – Foster Wheeler Ltd
G – Gas
GE – General Electric Co
GP – Jett-generated power
Gr – Grate
Gy – Gyratory
H – Internal
JI – John Inglis Co, Ltd
M – Motor drive
Ma – Magnetic coupling
Me – Mechanical
N – None
NC – Non-condensing
O – Oil
Ov – Overload
P – Pulverized fuel firing
PF – Pressurized furnace
Pl – Plate
Pn – Pneumatic
PP – Purchased power
Pr – Primary
R – Regulator
Re – Regenerative
RS – Riley Stoker Corp
S – Speed control
Sa – Sawdust
Se – Secondary

Institutional Plants, 250 psi and Above

Fuel			F.D. fans		I.D. fans				Feed pumps		Turbines					Condenser			Electrical power								
	Heating value, 1000 Btu per lb	Ash softening temperature, F	Drive	Air volume control	Drive	Gas volume control	Water treatment	Ash handling	Drive	Flow control	Capacity, each, 1000 kw	Manufacturer	Backpressure, psia	No. of bleed or auto-extraction pts	Type	Surface, 1000 sq ft	No. water passes	Tube material	Source	Generator nameplate voltage, kv	Plant distribution voltage, kv	Transformer type	Switchgear relay protection	Neutral grounding	Total boiler capacity incl new units, 1000 lb per hr	Total generator capacity incl new units, 1000 kw
600 PSI AND ABOVE																											
C	12.5 18.5	1900	S	S	M	D	So,Ev	Pr	2M	Hy	67.5[4]	WE	1.0[1]	5	Co	35.0	1	Ad	PP	13.8	{13.8 4.2,2.4}	O,As	{Di Ov,Gr}	Pr,Se	1120	150
C	12.4	2150	M	{S,D Hy}	M	{S,D Hy}	So	Pn	2M	S,Hy	40	WE	2.0[1]	5	Co	27.5	1	Ad	PP,GP	–	13.8	O	{Di Ov,Gr}	{Pr Se}	500	40
C	14	2200	M	D	M	Ma	De	Hy	2M	R	6.0	GE	450	–	NC	–	–	–	FF,GF	6.6	0.6	O	Ov	–	750	30
C	10[2]	–	M	V	M	D	De	–	M,T	S	3.0	BB	1.8[1]	1	AE,Co	2.0	3	Ad	PP,GP	4.2	4.2	O	{Di, Ov,Gr}	{Pr, Se}	300	3.0
C,O	13.8	2200	M	V	M	V	I	–	M,T	–	7.5	EI	195	–	NC	–	–	–	–	–	–	–	–	–	500	22
C	12.4[3]	2150	M	V	M	D	So	Pn	2M	R	7.5	GE	2.0[1]	2	AE,Co	6.5	2	Ad	GP	4.8	4.8	–	Di,Ov	N	495	18.8
O,G	–	–	M	V	M	D	–	–	T	R	25.0	WE	2.0[1]	3	AE,Co	18.0	2	Ad	–	–	–	–	–	–	900	45
G	1.1[2]	–	Dr	Dr	Dr	D	De	–	2T	S	6.0[4]	EI	35	1	AE,NC	–	–	–	–	–	–	–	–	–	450	12.0
G	12.5	–	M	D	M	D	So	Pn	M,T	R	6.0	EI	35	2	NC	–	–	–	PP,GP	4.2	0.4	O	Ov	Pr,Se	140	6.6
G	–	–	–	–	–	–	–	–	–	–	1.9	WE	250	0	NC	–	–	–	GP	4.2	4.2	O	Di,Ov,Gr	Pr	14.1	1.9
G	11.5	2150	M	V	M	V	I	Pn	So	Pn	M	Hy	–	–	–	–	–	–	–	–	0.4	–	–	–	675	–
G	12.1	–	M	D	M	{S,D V}	So,Ev	–	2M,1T	R	7.5[4]	GE	1.5[1]	2	Co	9.0	2	AlBr	GP	2.4	2.4	Dr[8]	{Di Ov,Gr}	N	180	15
O,G[10]	10	–	T	S,D	T	{S,D V}	De	–	1M,3T	S	–	–	–	–	–	–	–	–	PP	–	12.2,3	O	Ov	Se	525	–
O,G[11]	11	–	T	S,D	–	–																				
O,G[10]	10	–	T	S,D	T	S,D	So	–	2T	R	–	–	–	–	–	–	–	–	PP	–	0.4,0.2	O,As	Di,Ov	N	460	–
O,G	1.0[2]	–	T	S,D	T	D	Sc	–	1M,2T	S	0.5	Wo	4.0[1]	0	Co	–	2	Ad	PP,GP	0.6	0.4	O	Ov	Pr,Se	300	–
C	11.0	2200	M	V	Dr	D	Sc	–	2M,1T	R	3.0[4]	AC	30	1	AE,NC	–	–	–	–	–	–	–	–	–	330	6.0
C	12.3	2050	T[12]	S,D	T[12]	D	Sc	Pn	2T,1De	S	1.5[4]	WE	165	–	NC	–	–	–	PP,GP	2.3	2.3	O	Ov,Gr	N	180	3.0
O	–	–	M	V	M	D	Sc,Ev	–	1M,1T	R	3.5[13]	GE	–	4	AE,Co	–	2	Ad	–	–	–	–	–	–	665	10
G	1.1[2]	–	M	D	–	–	De,So	–	2M	–	12.5[4]	GE	3.0[1]	1	AE,Co	15.0	2	AsCu	GP	2.4,6.9	2.4,6.9	O	Di,Ov	–	770	32
G	–	–	M	V	M	V	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C,O,G	10.7	2000[5]	M	V	T	D	So	Pn	2T	S	–	–	–	–	–	–	–	–	PP	–	2.3	–	Ov	N	180	–
C	13.4	–	M	V	M[5]	D	Sc	Pn	4M,1T	R	1.5[4]	WE	–	1	Co,NC	1.8	2	–	PP,GP	–	–	Dr	Ov	N	130	3.0
C	13.6	2200	M	V	T	S,D,V	Sc	Pn	2T	S	–	–	–	–	–	–	–	–	PP,GP	2.3,0.6	2.3,0.6	O	Ov,Gr	N	570	13
C	12.0	2150	T	S,D	M	S,D	De,So	–	1M,1T	S,R	4.0	AC	30	–	–	–	–	–	PP,GP	4.2	0.4	O	Ov	–	240	7.5
G	0.95	–	T	S	T	–	So	–	T	R	–	–	–	–	–	–	–	–	PP	–	12.0	O	Ov	Pr,Se	500	–
900 PSI																										
	12.6	2150	T	S	T	S	So	Hy	3T	S	–	–	–	–	–	–	–	–	PP	–	4.2	O	Ov	Pr	80	–
	1.1[2]	–	M	D	–	–	Sc	–	3M	R	–	–	–	–	–	–	–	–	PP	–	0.4	O	Ov	N	–	–
O,G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	PP	–	12.5	O	{Di, Ov,Gr}	Se	900	–
C	10.0	2400	M,T	V	M	Hy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
O,WH	19.0[17]	–	M	D	–	–	So	–	1M,1T	S,R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
O	18.0	–	1M,3T	D	–	–	Sc	–	1M,2T	R	–	–	–	–	–	–	–	–	PP	–	–	O	Ov	–	125	–
WH	16.0	–																								
C	11.5	2050	M	D	T	D	Sc	Pn	2M,1T	R	0.3	GE	20	–	NC	–	–	–	PP,GP	4.2	–	–	–	–	100	–
C,O	10.6	–	T	S,D	T	S,D	Sc	Pn	T	S,R	2.0	Wo	15	–	NC	–	–	–	PP,GP	0.5	0.4	–	Ov	N	240	3.0
O	–	–	T	S	M	D	Sc	–	M,T	R	7.5	EI	2.0[1]	0	Co	7.0	1	Ad	PP,GP	4.2	0.4	–	–	–	154	7.5
G	–	–	–	–	–	–	–	–	–	–	1.5	WE	115	–	NC	–	–	–	GP	2.4	2.4	O	{Di, Ov,Gr}	Pr	198	1.5
G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	PP	–	{12.5 4.2,0.4}	O	{Di, Ov,Gr}	{Pr Se}	220	–
C,Sa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	PP	–	0.5	Dr	Ov	Pr,Se	60	0.8
O,G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	PP	–	2.3,0.4	O	Ov	N	60	–
O,G	1.0[2]	–	T	S	–	–	Sc	–	2T	R	0.6[4]	GE	15	–	AE,NC	–	–	–	GP	–	–	O	Ov	Pr	175	1.5
O[18]	–	–	–	–	–	–	–	–	–	–	10.0	GE	1.5[1]	O	Co	–	–	–	GP	–	6.9,2.3	O	Di,Ov	N	3945	140
C	10.1	1900	M	V	M	Hy	Sc	Pn	2M,1T	R	1.5[4]	WE	2.0[1]	1	AE,Co	–	2	Ag	PP,GP	2.4	2.4	O	Di,Ov	N	260	4.8
C	13.5	2450	M	V	M	D	De	Me	M,T	S,R	2.5	EI	0.5	–	Co	–	–	–	PP,GP	2.4	0.2	O	Ov	N	55	2.5
O	18.5	–	Dr	V	Dr	D	Sc	–	M,T	S,R	–	–	–	–	–	–	–	–	PF	–	–	–	–	–	55	–
O	18.7	–	M	D	–	–	I	–	2M,1T	R	1.5[4]	Wo	15	–	NC	–	–	–	GP	2.3	0.2	{Dr, O,As}	Ov	Se	125	3.9
O	–	–	M	V	–	–	So	–	–	–	–	–	–	–	–	–	–	–	PP	–	0.4	O	Ov	–	–	–
C	13.0	2300	M,T	D,S	M,T	D,S	I	Pn	M,T	–	–	–	–	–	–	–	–	–	GP	–	–	O,Dr	{Di Ov,Gr}	–	–	–
O	17.6	–	–	S,D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C[21]	–	2300	M,T	D,S	M	D,S	So	–	M,T	S,R	–	–	–	–	–	–	–	–	GP	–	–	–	–	–	140	–
C,O	12.8	2250	M	S	M	D	–	–	M,T	S,R	0.7	Wo	55	O	NC	–	–	–	–	–	–	–	–	–	–	–
O,G	19.0	–	T	S	T	S	Sc	–	3T	S	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
O,G	–	–	–	–	–	–	–	–	–	–	0.3	Wo	100	–	NC	–	–	–	PP,GP	0.5	0.4,0.1	O,Dr	Ov	Pr,Se	50	0.3
O,G	18.1[2]	–	M	S	–	–	De,Sc	–	M,T	R	0.2	WE	15	–	NC	–	–	–	PP,GP	0.5	0.5,0.1	As	Ov,Gr	N	20	0.2
O,G	13.6	–	Dr	V	–	–	Sc	–	M,T	S	3.5	WE	20	1	–	–	–	–	PP,GP	2.4	2.3,0.2	O	Ov	Pr	120	3.0
G	1.2[2]	–	M	V	–	–	Sc	–	T	S	–	–	–	–	–	–	–	–	PP	–	–	–	–	–	17.5	–
O	19.3	–	M,T	D,V,S	M,T	S,V	I	–	2M,2T	R	2.5	Wo	2.5[1]	1	AE,Co	1.4	2	Ad	GP	2.4	–	Dr	{Di, Ov,Gr}	N	120	7.5

– Softener
– Spreader stoker
  turbine drive
  ravel-grate stoker
– Tubular
– Union Iron Works
– Vane control
– Henry Vogt Machine Co
– Westinghouse Electric Corp
– Waste heat

Wi – Wickes Boiler Co
Wo – Worthington Corp
(S17) – Stoker grate area, sq ft
1 – In. Hg absolute
2 – 1000 Btu per cu ft, tor gas
3 – Oil, 19.7 000 Btu per ga.
  Gas, 1070 Btu per cu ft
4 – Two units installed
5 – Two motors per fan
6 – Steam
7 – Cement-kiln flue gas
8 – For auxiliary power
9 – Ahead of boiler
10 – Pitch blend (18,500 Btu per lb) and refinery gas (765 to 1374 Btu per cu ft)
11 – CO gas from catalytic cracker, residual oil (17,980 Btu per lb), pitch blend (16,500 Btu per lb), refinery gas (765 to 1374 Btu per cu ft)
12 – Same turbine drives both fans
13 – Three units installed
14 – Future
15 – Initial
16 – Also CO gas
17 – For oil
18 – Also coke-oven and blast-furnace gas
19 – Also byproduct propane
20 – Oil, 18,550 Btu per lb
  Gas, 1030 Btu per cu ft
  Propane, 21,710 Btu per lb
21 – Also coke breeze

nstitutional Plants, Below 250 psi

Compiled by H P Hatten, Assistant Editor

Company & Location	Consulting Engineers	First operation, new units	Operating steam pressure, psig	Operating steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Firing	Ash handling	TURBINES: Type	TURBINES: Manufacturer	ELECTRICAL POWER: Source	ELECTRICAL POWER: Plant distribution voltage, kv	ELECTRICAL POWER: Transformer type	ELECTRICAL POWER: Switchgear relay protection	ELECTRICAL POWER: Neutral grounding	Total boiler capacity including new units, 1000 lb per hr	Total generator capacity including new units, 1000 kw
Mills Inc Dillon, S C	Chas T Main Inc	7-55	150	–	2	30	CE	O Cv	–	–	–	PP	0 5	O	Ov	Pr Se	60	–
Manitoba Div Winnipeg Man		–	150	365	2	15	DBr	O	–	–	–	–	–	–	–	–	30	–
Motor Co Livonia, Mich	Albert Kahn Assoc	6-53	150	365	{2 80 / 1 40}		Wi	SS[6]	Pn	–	–	–	–	–	–	–	200	–
Motor Co Walton Hills, Ohio	H K Ferguson Co	1954	150	Sat	3	40	CE	TG(132)	Pn	–	–	PP	–	–	–	–	120	–
Cum Co McIntosh, Ala	Brown & Root	1-53	150	366	2	6	Wi	O	–	–	–	–	–	–	–	–	30	–
Northern Ry St Cloud, Minn		7-55	150	366	2	25	WB	O G	–	–	–	–	–	–	–	–	50	–
[redacted] Co Pittsburgh, Pa	Peter F Loftus Co	9-53	150	Sat	1	50	BW	SS(136)	–	–	–	–	–	–	–	–	100	–
[redacted]		6-54	150	366	5	30	FW	O G	–	–	–	–	–	–	–	–	150	–
Jersey State Hospital Greystone Pk, N J	Burns & Roe Inc	10-55	150	Sat	2	32	–	O PF	–	–	–	–	–	–	–	–	150	–
Western Univ, Evanston, Ill	Geo L Reichert	2-55	150	Sat	2	36	BW	O	–	–	–	PP	–	–	–	–	–	–
State School Tuscaloosa, Ala		9-55	150	Sat	1	35	Vo	UF(90)	Me	–	–	–	–	–	–	–	–	–
Purina Co St Louis, Mo		8-55	150	Sat	1	30	CE	O G	–	–	–	PP	–	O	–	Se	–	–
S & A Robinson Ltd, Toronto, Ont		1-54	150	365	1	18	UI	O	–	–	–	PP	0 6	O	Ov,Gr	Se	36	–
Gen'l Hospital St John, N B	A C Mackie	5-55	150	366	3	10 5	CB	O	–	–	–	PP	0 6,0 2	Dr	–	–	31 5	–
Inc, Clifton, N J	E Gruenberg	–	150	360	1	16	BW	O	–	–	–	PP	0 5	O,Dr	Ov	–	26	–
Lumber Co Somers, Mont		9-55	150	366	1	20	UI	O	–	–	–	–	–	–	–	–	20	–
Mills Inc Winston-Salem, N C	heat Engineering Co	6-53	150	–	1	5 2	CB	O G	–	–	–	–	–	–	–	–	–	–
ngfield State Hospital Statesville, Mo	James A Posey	1-54	150	366	6	60	EC	{1–P / 3–UF / 2–SS}	–	AE	GE	–	–	–	–	–	360	1 4
Weather Div, Gen'l Tire & Rubber Co Toreoc, Ohio		9-55	150	Sat	1	40	BW	SS(122)	Pn	–	–	–	–	–	–	–	–	–
Roller Bearing Co Bucyrus, Ohio	Paul Chester	1955	150	Sat	2	25	CE	UF(84)	Pn	–	–	–	–	–	–	–	50	–
[redacted]		5-55	150	Sat	1	100	FW	O	–	NC	AC	PP,GP	0 5	O	Ov	N	200	1 8
Mfg Co Ltd Toronto, Ont	P H Angus & Assoc	12-55	150	Sat	2	12	FWL	SS(37)	Me	–	–	PP	0 6	O	Ov	N	24	–
[redacted]																		
Center Louisville, Ky	E R Ronalc	11-54	149	353	3	41	Vo	TG(117)	Pn	–	–	–	–	–	–	–	150	–
Refineries Ltd St John, N B	H G Acres Co Ltd	7-54	140	401	1	80	CE	O	–	–	–	–	–	–	–	–	230	–
Paper Corp Ltd, Que	H G Acres Co Ltd	10-55	140	Sat	2	80	FW	O[3]	–	–	–	PP	–	–	–	–	–	–
Oil & Refining Ltd Ft William, Ont		7-55	140	360	1	32	JI	O	–	–	–	PP	0 6,0 2	O	Ov	Se	40	–
Mills, Chicago, Ill		1-55	135	–	1	5	BW	P SS	Me	–	–	PP	0 4	O	Ov	N	–	–
State Auth, Wernersville, Pa		9-55	135	Sat	3	30	–	TG	–	–	–	–	–	–	–	–	90	–
Sugars Inc Reserve, La		10-55	125	Sat	1	130	CE	G	–	–	–	–	–	–	–	–	–	–
Mills Co, La Grange, Ga		5-55	130	Sat	1	40	BW	O,G	–	–	–	–	–	–	–	–	40	–
Piece Dye Works, Charleston, S C		1-55	130	350	1	35	CE	O	–	–	–	PP	0 4	O	–	–	85	–
Universities Inc, Ucton, L I, N Y	Stone & Webster Engrg Corp	11-55	125	353	1	60	CE	O	–	–	–	PP	13 8,2 4	O	{Dr / Ov,Gr}	Se	100	–
Div Allied Chemical & Dye Corp Philadelphia, Pa		7-55	125	402	2	25	EC	O C[4]	–	–	–	PP	0 2	O	–	N	58	–
Co of America Lancaster, Pa		1-54	125	350	2	20	BW	C	–	–	–	PP	0 5	O	–	N	40	–
Energy of Canada Ltd Chalk River, Ont	C O Home Co Ltd	12-55	125	450	1	50	FW	TG(120)	Pn	–	–	PP	2 4	O	Ov,Gr	Se	200	–
Finishing Co Paterson, N J		1-54	125	–	2	30	CE	O	–	–	–	PP	–	O	Ov	Pr,Se	–	–
Mfg Co Jackson, Miss	[redacted]	8-54	125	353	1	28	FW	O,G	–	–	–	–	–	–	–	–	–	–
Citadel, Charleston, S C	Lockwood Greene Engrs	1955	125	Sat	1	40	CE	SS	Mn	–	–	PP	–	O	–	Pr,Se	130	–
A & M College, Ft Collins, Colo	Lutz & May	9-55	125	350	1	60	UI	SS[7]	–	–	–	PP	–	O	Ov	Pr,Se	116	–
National Defence, Centralia, Ont	Dillon Co	1953	125	352	3	27	VK	UF(85)	Pn	–	–	PP	0 6,0 2	Dr	Ov	–	83	–
National Defence, Goose Bay, Labrador	H A Hamright	11-53	125	365	3	25	CV	O	–	–	–	–	–	–	–	–	–	–
Empire Works Ltd Lachine, Que		12-54	125	352	3	25	DBr	O	–	–	–	–	–	–	–	–	88	–
Realty Co Ltd North York, Ont	R P Allison & Assoc	1-55	125	353	3	25	FWL	O	–	–	–	PP	4 2	O	Ov	N	–	–
RR, Horner, N Y	Jones, Cary, Millar Assoc	1954	125	Sat	2	22	CE	O,G	–	–	–	PP	–	–	–	–	44	–
Motor Co Louisville, Ky	Albert Kahn Assoc	12-54	125	350	{2 120 / 1 90}		Wi	SS	–	–	–	–	–	–	–	–	300	–
Motor Co, Sandusky, Ohio	Rust Eng Co	6-55	125	Sat	3	60	Wi	SS	Pn	–	–	PP	13 2,0 5	O	Ov,Gr	N	180	–
Motor Co Detroit, Mich	Drave Corr	5-55	125	Sat	3	70	Wi	SS	Pn	–	–	PP	13 2 0 5	O	Ov Gr	N	210	–
Center Capital Inc N Y, N Y	Sears & Nagle	4-55	125	353	2	50	CE	O	PP	–	–	–	–	–	–	–	100	–

Manual
ensing
ad
erized fuel firing

PF – Pressurized furnace
Pn – Pneumatic
PP – Purchased power
Pr – Primary
RS – Riley Stoker Corp
Se – Secondary

SS – Spreader stoker
Su – Superior Combustion Industries Inc
TG – Traveling-grate stoker
Ti – Titusville Iron Works Co
UF – Underfeed stoker
UI – Union Iron Works

VK – Vickers Keeler
Vo – Henry Vogt Machine Co
WE – Wm Bros Boiler & Mfg Co
Wi – Wickes Boiler Co
Wo – Worthington Corp
(126) – Stoker grate area, sq ft

1 – In Hg absolute
2 – 1000 Btu per cu ft
3 – One unit also burns bark
4 – Future
5 – Initial
6 – For coal and coke breeze
7 – For coal and lignite
8 – Steam

Industrials, Institutionals: Below 250 psi

Compiled by H P Kallen, Assistant Editor

Company & Location	Consulting Engineers	First operation, new units	Operating steam pressure, psig	Operating steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Firing	BOILERS: Ash handling	TURBINES: Type	TURBINES: Manufacturer	ELECTRICAL POWER: Source	ELECTRICAL POWER: Plant distribution voltage, kv	ELECTRICAL POWER: Transformer type	ELECTRICAL POWER: Switchgear relay protection	ELECTRICAL POWER: Neutral grounding	Total boiler capacity including new units, 1000 lb per hr	Total generator capacity including new units, 1000 kw
Gen'l Electric Co Waynesboro, Va.	Whitman, Requardt & Assoc	3-55	125	Sat	2	15	BW	O G	–	–	–	PP	0.5,0.3	O As	Ov,Gr	Pr Se	30	–
Gen'l Mills Inc Toledo Ohio	H K Ferguson Co	7-55	125	353	3	25	CE	O	–	–	–	PP	0.4	As	Ov	Pr Se	75	–
Gen'l State Authority, Shamokin Pa	Kutjian Corp	10-55	125	353	2	7.5	Ke	An	Mn	–	–	PP	–	O	Ov	Pr,Se	15	–
Grassiands Hospital Valhalla N Y	Krev & Hunt	9-55	125	354	1	33	BW	SS	Hy	–	–	PP	0.2	Dr	–	Pr,Se	125	–
Greenlee Bros & Co Rockford Ill		10-55	125	353	2	30	BW	TG(95)	Pn	–	–	PP	0.4	O As	Ov	N	85.8	–
Hamilton Mfg Corp, Columbus Ind		1-54	125	353	1	24	Vo	TG(95)	–	–	–	–	–	–	–	–	48	–
R M Hollingshead Corp, Camden N J.		3-55	125	–	2	17.5	Ti	O	–	–	–	PP	0.2	O,Dr	–	N	35	–
Pharma Chemical Corp Bayonne N J	J W Leatherdale	1953	125	Sat	2	9.9 16.5	CB	O	–	–	–	–	–	–	–	–	–	–
Maine Gen'l Hospital Portland, Me.		9-56	125	380	4	25	Bi	O	–	–	–	–	0.2	O	–	–	–	–
Md Terminals Corp Baltimore Md.		12-54	125	350	1	28.5	BW	O	–	–	–	–	–	–	–	–	28.5	–
Mass Hospital School Canton Mass		1-54	125	Sat	1	20	BW	O	–	–	–	PP	0.2	As	Ov	Se	30	–
National Brewing Co, Baltimore, Md.	Egli & Gompf	8-54	125	Sat	1	45	RS	O SS	–	–	–	PP	0.4	O	Ov	Se	90	–
Ontario Hospital Penetanguishene Ont		7-55	125	Sat	1	15	FWL	UF(39)	Me	–	–	PP	–	O	–	Pr,Se	40	–
Pinehurst Inc Pinehurst N C	Wiley & Wilson	–	125	–	2	17	BW	UF	Me	–	–	PP	–	O	–	–	34	–
Quaker Oats Co Chattanooga Tenn		10-55	125	Sat	1	14	Su	O C	–	–	–	–	–	–	–	–	18	–
Simpson Sears Ltd Etobicoke Can.	M Babcock Assoc.	8-54	125	345	3	20	FW	SS(58)	–	–	–	–	–	–	–	–	60	–
U S Naval Air Station Oceana Va.		1-55	125	352	2	50	UI	O	–	–	–	–	–	–	–	–	–	–
U S Army Ft Dix, N J		–	125	354	3	55	EC	SS(676)	–	–	–	–	–	–	–	–	165	–
Wis State College LaCrosse, Wis		4-55	125	378	1	12	UI	UF(50)	3	–	–	PP	–	–	Ov	–	30	–
Yankton State Hospital Yankton, S D	Tyne Engrg Co	1954	125	352	1	40	BW	O G	–	–	–	PP GP	–	O Dr	–	–	105	–
Atlas Powder Co Houghton Mich		1955	120	–	1	20	BW	UF	–	–	–	PP	–	–	–	–	40	–
Ont Dept of Highways Downsview Ont	H H Angus	4-55	110	Sat	2	15	FWL	O	–	–	–	PP	–	–	–	–	30	
Patuxent Institution Jessup Md	Whitman, Requardt Assoc	10-54	110	–	2	20	EC	SS	Pn	–	–	PP	–	O	Di	Se	–	
Toronto Western Hospital Ont.	H H Angus	4-55	110	Sat	2 1	15 12	JI	O UF(56)	Me	–	–	PP	0.6	O	Ov	Pr Se	42	
U S Army Ft Meade Md	Anderson Nichols & Co	7-55	110	343	3	59	UI	O	–	–	–	PP	–	O	Ov	Se	177	
U S Army, Ft Meade Md	Rummel Klepper & Kahl	–	110	343	3	2-53 1-3	Wi	SS(133) UF 21)	Pn	–	–	PP	–	–	Ov	Se	114	
American Sterilizer Co, Erie Pa		1-56	100	338	1	22.5	UI	PF O,G	–	–	–	PP	0.4	O	Ov,Gr	–	32.5	
Briggs & Stratton Corp Kadwatosa Wis	Albert Kahn Assoc	1955	100	Sat	2 1	25 10	CE	PF O,G	–	–	–	PP	–	–	–	–	60	
Century Mfg Co, Jackson, Miss.		–	100	–	1	30	FW	G	–	–	–	PP	0.4	O	Ov,Gr	Pr,Se	–	
Glover Cleveland H S Elizabeth N J	Runyon & Carey	1-55	100	300	2	12	Ti	O	–	–	–	PP	–	O	–	–	–	
Carborov Div, GE Co, Edmore, Mich.	Smith, Hinchman & Grylls	2-53	100	336	2	18	FW	O	–	–	–	–	–	–	–	–	53.4	
Dominion Engrg Works Lachine Que.		1954	100	–	1	25	DBr	O	–	–	–	–	–	–	–	–	88	
Ford Motor Co San Jose, Calif	Albert Kahn Assoc	9-54	100	338	3	17	CB	G	–	–	–	–	–	–	–	–	51	
Greenwell Springs Hosp, Greenwell Springs La		–	100	–	1 1	17 9.6	CB Su	G	–	–	–	PP	0.2	–	–	Pr Se	–	
Hotel Penn Alto Altoona Pa		10-54	100	Sat	1	10	Ke	UF(42)	–	–	–	PP	–	–	–	–	–	
Mt School for Deaf Frederick Md	Whitman, Requardt & Assoc	9-54	100	–	2	9.2	KR	O	–	–	–	PP	–	–	–	–	18.2	
McMaster Univ Hamilton Ont	L H Schwindt	11-54	100	Sat	1	20	FWL	UF	Me	–	–	PP	–	O	Ov	–	20	
Reading Hospital West Reading Pa	Gilbert Assoc	11-54	100	328	2	18	Ke	O	–	–	–	–	–	–	–	–	51	
Rock City Tobacco Co Ltd Que	G N Martin	9-55	100	325	2	9	CBr	O	–	–	–	–	0.6	O	–	Pr Se	15	
Tuscaloosa College Tuscaloosa Ala		12-54	100	–	1	17	BW	G	–	–	–	–	–	–	–	–	–	
Univ of Utah Salt Lake City Utah	J F Heath	1-55	100	334	1	45	EC	SS(140)	–	–	–	PP	0.4	Dr O,As	Ov,Gr	Pr Se	90	
Wash State Sanatorium Deaf Vancouver Wash	Bourton & Griffin	3-55	100	325	1	22	CE	O	–	–	–	–	–	–	–	–	31	

An – Dual anthracite
As – Asbury
Bi – Bigelow Co
BW – Babcock & Wilcox Co
CB – Cleaver-Brooks Co
CE – Combustion Engineering Inc
DBr – Dominion Bridge Co Ltd
E – Erie City Iron Works
Ec – Erie City
Em – Erie City Iron Works
FA – Foster Wheeler Ltd

FWL – Foster Wheeler Ltd
G – Gas
GP – Self-generated power
Gr – Ground
Hy – Hydraulic
JI – Johnstone Co Ltd
Ke – E Keeler Co
KR – Kewaunee-Ross Corp
Me – Mechanical
Mn – Manual
N – None

O – Oil
Ov – Overload
PF – Pressurized furnace
Pn – Pneumatic
PP – Purchased power
Pr – Primary
RS – Riley Stoker Corp
Se – Secondary
SS – Spreader stoker
Su – Superior Combustion Industries Inc

TG – Traveling-grate stoker
Ti – Titusville Iron Works
UF – Underfeed stoker
UI – Union Iron Works
Vo – Henry Vogt Machine Co
Wi – Wickes Boiler Co
(95) – Stoker grate area, sq ft
1 – Future
2 – Initial
3 – Steam

1955 Design Survey of Typical New S

Compiled by Althea Thornton, Assistant Editor

Company	Location	Plant name	Consulting engineers	Unit No., new units	First operation new units	Throttle pressure, psig	Steam temp, F: Throttle	Steam temp, F: Reheat	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Surface, 1000: Boiler & WW	BOILERS: Surface, 1000: Superheater	
Detroit Edison Co	River Rouge, Mich.	River Rouge		3	10-57	2400	1050	1000	1	2000	FW	14.6	57.5	47.7
Duke Power Co	Belmont, N. C.	Allen		1	6-57	2400	1050	1000	1	1160	CE	51.0	99.5	19.7
				2	9-57	2400	1050	1000	1	1160	CE	51.0	99.5	19.7
Niagara Mohawk Power Corp	Buffalo, N. Y.	C R Huntley		67	9-57	2400	1050	1000	1	1470	CE	36.7	116.3	24.9
Commonwealth Edison Co	Will County, Ill.	Will County	Stone & Webster Engrg Corp	3	10-57	2000	1050	1050	1	1800	CE	34.6	194.0	32.7
Consolidated Edison Co of N Y Inc	New York, N. Y.	Astoria		3	1958	2000	1050	1000	1	2400	...	.....	.....	
Consumers Power Co	Muskegon, Mich.	B C Cobb	Commonwealth Associates Inc	4	1956	2000	1050	1000	1	1050	CE	43.6	113.9	18.5
				5	1957	2000	1050	1000	1	1050	CE	43.6	113.9	19.1
Mississippi Valley Generating Co	West Memphis, Ark.	West Memphis	Ebasco Services Inc	1	12-57	2000	1050	1000	1	1550[6]	BW	32.8	160.4	21.7
				2	12-57	2000	1050	1000	1	1550[6]	BW	32.8	160.4	21.2
				3	12-57	2000	1050	1000	1	1550[6]	BW	32.8	160.4	21.2
Pennsylvania Electric Co	Seward, Pa.	Seward	Gilbert Associates Inc	5	4-57	2000	1050	1000	1	900	CE	25.4	89.5	13.6
Public Service Co of Oklahoma	Tulsa, Okla.	Tulsa	Black & Veatch	2	3-56	1980	1000	1000	1	1150[6]	BW	8.5	50.4	11.2
				4	3-58	1980	1000	1000	1	1150[6]	BW	8.5	50.4	11.2
Boston Edison Co	Everett, Mass.	Mystic	Jackson & Moreland	4	9-57	1800	1000	1000	1	935	CE	25.3	80.8	14.8
Dayton Power & Light Co	Dayton, Ohio	Frank M Tait	Gilbert Associates Inc	1	10-57	1800	1000	1000	1	930[7]	CE	.....	.....	
Delaware Power & Light Co	near Millsboro, Del.	Indian River	United Engrs & Constructors Inc	1	6-57	1800	1000	1000	1	625	BW	12.1	36.9	17.8
Georgia Power Co	Newnan, Ga.	Yates	Southern Services Inc	4	6-57	1800	1000	1000	1	900	CE	44.7	80.9	20.2
Mississippi Power Co	near Gulfport, Miss.	Gulf Coast	Southern Services Inc	1	6-57	1800	1000	1000	1	550	CE	14.0	48.4	7.6
Oklahoma Gas & Electric Co	Muskogee, Okla.	Riverbank	Sargent & Lundy	3	5-56	1800	1000	1000	1	1200	BW	8.9[9]	62.4	55.4
Potomac Electric Power Co	Alexandria, Va.	Potomac River[10]	Stone & Webster Engrg Corp	4	3-56	1800	1050	1000	1	725	CE	36.1	72.8	14.5
Rochester Gas & Electric Corp	Rochester, N. Y.	Russell	Gilbert Associates Inc	4	3-57	1800	1050	1000	1	560	CE	16.9	53.7	9.1
Rockland Light & Power Co	Tomkins Cove, N. Y.	Lovett	Burns & Roe Inc	3	3-55	1800	1050	1000	1	500	CE	21.7	45.0	6.3
Southern California Edison Co	El Segundo, Calif.	El Segundo, Calif.	Bechtel Corp	2	9-56	1800	1000	1000	1	1140[6]	BW	13.2	78.3	26.3
	Alamitos Bay	Alamitos	Bechtel Corp	1	11-56	1800	1000	1000	1	1140[6]	BW	13.2	78.3	26.3
				2	9-57	1800	1000	1000	1	1140[6]	BW	13.2	78.3	26.3
Virginia Electric & Power Co	Yorktown, Va.	Yorktown	Stone & Webster Engrg Co	1	7-57	1800	1000	1000	1	1200[6]	CE	59.7	90.1	19.2
Carolina Power & Light Co	Wilmington, N. C.	Wilmington	Ebasco Services Inc	2	4-55	1450	1000	1000	1	775	BW	17.6	46.6	15.2
Central Illinois Light Co	Peoria, Ill.	R S Wallace	Commonwealth Associates Inc	7	8-57	1450	1000	1000	1	690	RS	38.4	33.6	15.8
Central Illinois Public Service Co	Grand Tower, Ill.	Grand Tower	Sargent & Lundy	4	9-57	1450	1000	1000	1	700	BW	17.7	45.4	17.7
Central Louisiana Electric Co Inc	Baldwin, La.	Teche	Sargent & Lundy	2	3-56	1450	1000	1000	1	350[6]	RS	6.3	16.0	13.8
Dallas Power & Light Co	Dallas, Texas	Parkdale	Ebasco Services Inc	3	2-57	1450	1000	.....	1	1050[6]	BW	.....	.....	N
Florida Power & Light Co		South Florida	Bechtel Corp	4	5-57	1450	1000	1000	1	1100[6]	BW	14.9	.....	.....
				5	5-58	1450	1000	1000	1	1100[6]	BW	14.9	.....	.....
Florida Power Corp	Ellaville, Fla.	Suwannee River	Black & Veatch	2	11-54	850	900	.....	1	350	BW	27.7	13.9	N
				3	11-56	1450	1000	1000	1	600	RS	29.3	28.7	18.7
Gulf States Utilities Co	Beaumont, Texas	Neches[14]	Stone & Webster Engrg Corp	7	4-56	1450	1000	1000	1	700[6]	CE	21.7	.....	.....
Kansas Power & Light Co	Lawrence, Kansas	Lawrence	Black & Veatch	.	1-55	1450	1000	1000	1	475	CE	20.4	.....	.....
	Tecumseh, Kansas	Tecumseh	Bechtel Corp	6	11-55	850	900	.....	.	....	....	.....	.....	
San Diego Gas & Electric Co	Carlsbad, Calif.	Encina	Pioneer Service & Engrg Co	2	8-56	1450	1000	1000	1	700	BW	11.3	27.7	16.9
Southwestern Gas & Electric Co	Mooringsport, La.	Lieberman	Sargent & Lundy	3	4-57	1450	1000	1000	1	725[6]	CE	29.5	30.3	9.3
Tampa Electric Co	Tampa, Fla.	Gannon	Stone & Webster Engrg Corp	1	6-57	1450	1000	1000	1	900[6]	BW	.....	.....	.....
United Illuminating Co	Bridgeport, Conn.	Bridgeport Harbor	Jackson & Moreland	1	7-58	1450	1000	1000	1	575	BW	.....	.....	
Western Massachusetts Electric Co	West Springfield, Mass.	West Springfield	Stone & Webster Engrg Corp	3	7-57	1450	1000	1000	1	750	CE	19.0	40.8	9.7
Columbus & Southern Ohio Electric Co	South of Columbus, Ohio	Picway	Commonwealth Associates Inc	5	11-55	1250	950	.....	1	900[15]	RS	46.1	45.8	N
Madison Gas & Electric Co	Madison, Wis.	Blount St.	Pioneer Service & Engrg Co	6	9-57	1250	950	.....	1	425	BW	9.0	6.0	N
Southwestern Public Service Co	Hobbs, N. Mex.	Cunningham		1	3-57	1250	950	.....	1	625[6]	CE	16.6	.....	N
Nova Scotia Light & Power Co Ltd	Halifax, N.S.	Water St		6	7-57	900	900	.....	1	500	BWG	35.8	17.6	N
Calgary Power Co Ltd	Wabamun, Alberta	Wabamun	Montreal Engrg Co Ltd	2	9-56	850	900	.....	1	625	BWG	39.4	44.3	N
Central Power & Light Co	Lon Hill, Texas	Lon C Hill	Sargent & Lundy	2	4-56	850	900	.....	1	630	SW	32.5	15.8	N
El Paso Electric Co	El Paso, Texas	Rio Grande	Stone & Webster Engrg Corp	6	6-57	950	960	.....	1	450	BW	24.5	9.9	N
Interstate Power Co	Lansing, Iowa	Lansing	Sargent & Lundy	3	9-57	850	900	.....	1	300	RS	35.0	13.2	N
Iowa Electric Light & Power Co	Marshalltown, Iowa	Sutherland		1	7-55	850	900	.....	1	325	RS	33.7	0.9	N
				2	9-55	850	900	.....	1	325	RS	33.7	0.9	N
Pacific Gas & Electric Co	south of Eureka, Calif.	Humboldt Bay	Bechtel Corp	1	6-56	850	900	.....	1	475[6]	BW	25.7	17.0	N

AC – Allis-Chalmers Mfg Co
Ad – Admiralty
AdBr – Admiralty Brass
AdI – Admiralty, Inhibited
AlBr – Aluminum Brass
AsAd – Arsenical Admiralty
AsCu – Arsenical Copper
AsAlBr – Arsenical Aluminum Brass

BB – Brown Boveri Corp
BW – Babcock & Wilcox Co
BWG – Babcock-Wilcox & Goldie-McCulloch Ltd
C – Coal, Bituminous
CE – Combustion Engineering Inc
CES – Combustion Engineering-Superheater Ltd

CNi – Cupro nickel
Con – Condenser deaeration
Cu – Copper
Cy – Cyclone furnace
D – Damper
DB – Dry bottom
DL – DeLaval Steam Turbine Co
Du – Dual turbine and motor drive

EL – Elliott Co
FW – Foster Wheeler Corp
G – Natural gas
GE – General Electric Co
Hy – Hydraulic coupling
L – Lignite
M – Motor drive
Ma – Magnetic coupling
MI – Murray Iron Works Co

Mp – Two motors per fan
Mu – Muntz metal
MV – Metropolitan-Vickers Electrical Co Ltd
N – None
O – Oil
P – Pulverized
PAd – Phosphorized admiralty
Pl – Plate

	Heat release, 1000 Btu per cu ft per hr	Furnace bottom	Economizer surface per boiler, 1000 sq ft	Air-heater surface per boiler, 1000 sq ft	Air-heater type	F-D FANS		I-D FANS		Firing	FUELS			FEED PUMPS		TURBINES					Full-load de-aerator pressure, psia	CONDENSERS			Total boiler capacity incl new units, 1000 lb per hr	Total generator capability incl new units, 1000 kw
						Drive	Air-flow control	Drive	Gas-flow control		Type	Heating value 1000 Btu per lb	Ash-softening temperature, F	Drive	Flow control	Number	Capability, each 1000 kw	Manufacturer	Backpressure, psia	No. bleed points		Surface, 1000 sq ft	No. water passes	Tube material		
108.0	14.2	DB	142.6	894.3	Re	M	V	M	....	P	C	11.7	2200	3 M	Hy	1	300[1]	AC	0.5	7	Con	170	1	Ad	4430	820
112.0	14.0	DB	28.5	201.6	Re	M	V	M	Hy	P	C	13.3	2260	2 M	Hy	1	175	GE	0.75	6	Con	105	2	...	3320	350
112.0	14.0	DB	28.5	201.6	Re	M	V	M	Hy	P	C	13.3	2260	2 M	Hy	1	175	GE	0.75	6	Con	105	2	...		
104.0	17.6	DB	38.0	312.8	Re	M	V	M	D	P	C	13.1	2170	2 T	S	1	200[1]	GE	0.5	7	SO	90	1	Ad	9817	1050
100.0	12.2	DB	61.7	422.5	Re	M	V	M	Hy	P	C	10.0	2000	3 M	Hy	1	275[1]	GE	0.5	7	32	140	1	PAd	4200	605
	....	DB	...	...	Re	M	...	...	...	P,O,G	C,O,G	13.6	2100	...	...	1	338[1]	GE	0.5	7	176	187	1	AlBr	5140	700
85.0	20.7	DB	30.7	317.5	Tu	M	V	M	D	P	C	11.0	2100	3 M	R	1	156[3]	WE	1.25	6	Con	70	2	AsAd	3900	510.5
85.0	20.7	DB	30.7	317.5	Tu	M	V	M	D	P	C	11.0	2100	3 M	R	1	156[3]	GE	1.25	8	Con	70	1	Ad		
94.0	25.1	ST[4]	N	446.0	Tu	M	V	...[4]	...	Cy	C	10.0	1950	4 M	R	1	234[6]	WE	1.5	7	109	110	2	Ad	4650	702
94.0	25.1	ST[4]	N	446.0	Tu	M	V	...[4]	...	Cy	C	10.0	1950	4 M	R	1	234[6]	WE	1.5	7	109	110	2	Ad		
94.0	25.1	ST[4]	N	446.0	Tu	M	V	...[4]	...	Cy	C	10.0	1950	4 M	R	1	234[6]	WE	1.5	7	109	110	2	Ad		
98.0	12.9	DB	25.3	178.6	Re	M	V	M	V	P	C	11.1	2275	3 M	S	1	137.5	GE	0.75	7	90	65	1	Sup	2290	294.5
51.2	36.0	...[4]	15.1	205.0	Tu	M	D	...[4]	.	O,G	O,G	19.0	....	3 M	R	1	175[3,6]	WE	1.25	5	85	120	2	AsCu	3550	500
51.2	36.0	...[4]	15.1	205.0	Tu	M	D	...[4]	...	O,G	O,G	19.0	.....	3 M	R	1	175[3,6]	WE	1.25	5	85	120	2	AsCu		
58.9	21.5	DB	15.4	223.8	Re	M	V	M	...	P,O	C,O	13.5	2200	3 M	....	1	125[3]	GE	0.75	6	100	75	1	AlBr	2225	275
	13.5	DB	...		Re	M	V	M	...	P	C	12.0	2300	3 M	R	1	140	GE	0.75	7	106	90	2	Ad	2430	300
47.6	17.0	DB	16.9	166.2	Re	M	V	M	V	P	C	13.1	2200	2 M	R	1	75	WE	0.75	6	86.7	50	1	... ...	625	75
83.0	13.2	DB	25.6	102.1	Re	M	Hv	M	Hy	P,G	C,G	11.6	2550	3 M	Hy	1	125[2]	GE	1.75	5	73.5	90	2	Ad	3625	425[2]
62.4	18.5	DB[4]	7.8	144.3	Re	M	D,Hy	...[4]	...	G	G	1000[8]	.....	2 M	Hy	1	75	GE	1.75	5	75	65	2	AlBr	550	75
78.6	21.5	DB	10.4	227.0	Re	M	V	...	...	G,O	G,O	1100[8]	.....	3 M	Hy	1	171	GE	1.0	6	123	80	2	PAd	1500	196
63.0	.....	DB	24.6	246.0	Tu	M	D	M	S,Ma	P	C	13.0	2000	3 M	S,Hy	1	100[3]	GE	0.5	7	78.5	70	2	Ad	3050	380
54.1	13.6	ST	10.6	115.8	Re	M	V	M	D	P	C	13.2	2100	3 M	R,Hy	1	83.5	GE	0.5	6	Con	40	2	Adl	1980	275
27.2	22.5	DB	20.0	83.5	Tu	M	V	M	Hy	P,O,G	C,O,G	13.0	2000	2 M	Hy	1	66[3]	GE	0.5	6	93.7	46.6	1	Ad	900	110
83.0	18.5	DB	N	339.0	Re	M	D,V	M	D,V	O	O[5]	.....	.....	2 M	R	1	156[6]	GE	0.75	7	19.7	90	2	AsAlBr	2280	300
83.0	18.5	DB	N	339.0	Re	M	D,V	M	D,V	O,G	O,G	.....	.....	2 M	R	1	156[6]	GE	0.75	7	19.7	90	2	AsAlBr	2280	300
83.0	18.5	DB	N	339.0	Re	M	D,V	M	D,V	O,G	O,G	.....	.....	2 M	R	1	156[6]	GE	0.75	7	19.7	90	2	AsAlBr		
—	17.6	DB	33.6	217.2	Re	M	V	M	D	P,G	C,G[11]	14.5	1800	3 M	Hy	1	150[3]	GE	0.75	7	.....	80	1	.....	1200	150
55.3	20.3	DB	9.5	101.3	Re	M	D	M	D	P	C	13.8	2400	3 M	R	1	100[3]	GE	1.25	5	.....	70	2	Mu	1425	220
60.7	15.7	DB	9.2	142.6	Re	M	Hv	M	Hy	P	C	9.8	1900	2 M	Hy	1	100[3]	WE	1.25	5	.....	56	2	Ad	3130	315
53.1	17.5	DB	15.7	222.0	Re	M	V	M	Hy	P	C	11.0	2100	2 M	Hv	1	100[3]	WE	0.75	5	100	70	2	AsCu	1850	220
16.9	29.2	[4]	7.0	76.6	Re	M	V	...[4]	....	G	G	1080[8]	.....	2 M	R	1	54[6]	GE	0.75	5	78.5	35	2	Ad	550	78
—	.....	....[4]	...	.....	Re	M	V	...[4]	...	O,G	O,G	19.0	.....	3 M	R	1	125[6]	GE	1.25	4	Con	75	2	AsCu	2675	327
61.1	24.3	DB	11.2	144.4	Re	M	D	M	D	O	O	16.3	.....	3 M	R	1	125[6]	WE	1.75	6	Con	80	1	AlBr	3190	410
61.1	24.3	DB	11.2	144.4	Re	M	D	M	D	O	O	18.3	.....	3 M	R	1	125[6]	WE	1.75	6	Con	80	1	AlBr		
22.3	19.0	DB	N	33.2	Re	M	V	M	D	O,G[12]	O,G[12]	18.4	.....	...[13]	R	1	31[3]	WE	1.25	5	26.8	30	2	AsCu	1300	132
35.5	22.8	DB	11.5	103.6	Re	M	V	M	D	O,G	O,G	18.2	.....	3 M	R	1	70[3]	GE	1.0	5	56	55	1	Adl		
47.0	.....	...[4]	.....	.....	Re	M	V	...[4]	...	G	G	1050[8]	.....	2 M	R	1	111[3,6]	WE	1.25	5	75	65	2	CNr	3000	375
28.4	.....	ST	15.4	110.0	Re	M	D,V	M	D,V	P,O,G	C,O,G	.....	.....	2 M	R	1	62.5	GE	0.75	5	.....	40	2	Ad	950	110
	.....	...	...	.....	...	..	...	...	...	.....	.....	.....	.....	...	...	1	33[3]	AC	0.75	5	Con	30	2	Adl	1300	116
45.0	21.0	...	17.4	102.0	Re	M	D,Hv	M	D,Hy	O,G	O,G	17.9	.....	2 M	Hy	1	100	GE	0.75	5	105	60	2	AlBr	1400	200
58.3	17.7	...[4]	22.4	135.6	Re	M	V	...[4]	....	G	G	1040[8]	.....	2 M	Hy	1	100[3]	WE	1.0	5	100	65	2	AsCu	1225	150
45.6	.....	...	10.5	94.4	Re	M	...	M	...	....	C	11.6	.....	3 M	R	1	120[3]	GE	0.75	5	.....	75	1	CNr[22]	900	120
—	.....	...[4]	...	...	...	M	...	...[4]	...	Cy	C,O	...	.....	2 M	R	1	75[3]	GE	1.75	6	75	45	1	AlBr	540	75
68.5	15.1	DB	30.5	132.2	Re	M	Hv	M	Hy	P	C	12.0	2150	3 M	Hy	1	100[3]	GE	1.25	5	80	55	2	PAd	1550	196
80.0	12.5	DB	14.2	176.4	Re	M	Hv	M	Hv	P	C	10.5	2300	2 M	Hy	1	100	WE	0.75	5	Con	60	2	AsCu	2760	250
25.5	19.5	DB	10.7	74.5	Re	M	V	M	Hv	P	C	11.5	2150	2 M	Hy	1	44[3]	AC	0.75	5	84	25	2	Ad	1385	131
35.7	22.4	...[4]	24.9	121.4	Re	M	D,V	...[4]	...	G	G	1000[8]	.....	2 M	Hy	1	75[3]	GE	1.0	5	76.6	60	2	AsAd	665	75
16.2	.....	ST	3.2	127.5	Tu	M	D	....	...	Cy,O	C,O	12.5	1900	.....	R	1	49.5	MV	0.75	5	29.6	31	2	Yo	1520	138
56.9	16.9	DB	10.2	75.8	Re	M	D,V	M	D	G,O[16]	G,O[18]	1172[8]	.....	2 M	R	1	66[3]	MV	0.75	5	75	46	2	Ad	.....	.....
27.9	30.0	...[4]	...	155.2	Tu	M	D	...[4]	....	G,O	G,O	1050[8]	.....	2 M	R	1	66[3]	GE	1.25	4	77	60	2	AsAd	1300	132
17.8	32.0	...[4]	N	75.9	Re	M	V	...[4]	....	G,O	G,O	1000[8]	.....	2 M	R	1	44[3]	WE	1.0	5	76	35	2	Ad	.....	.....
23.5	16.5	ST	...	51.9	Re	M	V	M	Ma	P	C	10.5	2100	M	Hy	1	33[3]	AC	0.75	4	90	22.5	2	Ad	540	63
23.0	.....	DB	...	49.4	Re	M	V	M	Hy	P,G	C,G	8.9	2100	...[13]	R	1	33[3]	GE	1.25	5	25	27.5	2	Ad	650	66
23.0	...	DB	...	49.4	Re	M	V	M	Hy	P,G	C,G	8.9	2100	...[13]	R	1	33[3]	GE	1.25	5	25	27.5	2	Ad		
16.2	22.0	DB	N	66.1	Re	M	D,V	M	D	O	O	18.5	.....	1M,1T	R	1	50[6]	WE	0.75	5	86	27.5	2	AlBr	475	50

R – Regulator
Re – Regenerative
RS – Riley Stoker Corp
S – Speed control
SP – Springfield Boiler Co
SS – Spreader stoker
ST – Slag tap
Sup – Superior
T – Turbine drive

TG – Traveling grate stoker
Tu – Tubular
UF – Underfeed stoker
V – Vane control
WE – Westinghouse Electric Corp
Wi – Wickes Boiler Co
WO – Worthington Corp
Yo – Yorkaloro metal
(318) – Stoker grate area, sq ft

1 – Hz 3600 rpm, to 1800 rpm
2 – Nameplate rating
3 – Preferred standard unit
4 – Pressurized furnace
5 – High viscosity oil
6 – Outdoor installation
7 – Monotube boiler
8 – Btu per cu ft
9 – Boiler only; furnace 18.4
10 – Revised data, previously listed 9/53
11 – Delayed refinery coke
12 – Future coal
13 – 3 motor-driven pumps for 2 boilers
14 – Revised data, previously listed 9/54
15 – Semi-outdoor boiler
16 – Future pulverized
17 – Modified for 1450 psig operation
18 – Future lignite
19 – Owned by Central Iowa Power Co-operative, but operated by Iowa Electric Light and Power Co
20 – One automatic, one uncontrolled
21 – Fusion temperature
22 – 90-10

1955 Design Survey: Typical Hydroelectric

Compiled by F A Annett
Contributing Editor

Company or government agency	Design or consulting engineers	Project name	[1] New or redeveloped	River	State	Project started, date	[2] Dam type	Crest length, ft	Max height, ft	[3] Type of installation
NEW ENGLAND STATES										
Central Maine Power Co	Chas T Main Inc; Nepsco Services, Inc	Indian Pond	New	Kennebec	Me	1952	CG	500	180	I
Central Maine Power Co	Central Maine Power Co	Bar Mills	Red.	Saco	Me	1955				I
Rumford Falls Power Co	Chas T Main Inc	Lower Station	Red	Androscoggin	Me	1953				I
St Croix Paper Co	Chas T Main Inc	Woodland	Red	St Croix	Me	1954				I
Claremont Paper Mill		Claremont	Red		N. H.	1953				I
Connecticut River Power Co	Chas T Main Inc; N E. Power Service Co	Littleton	New	Connecticut	N. H. & Vt	1952	C&E	3,148	180	I
Swanton Electric Light Dept	Chas T Main, Inc	Highgate Falls	Red	Missisquoi	Vt	1953	CG	300	20	I
American Writing Paper Co		Holyoke	New		Mass.	1953				I
Merrimac Paper Co		Lawrence	Red		Mass.	1953				I
Electric Power, Inc	Chas T Main Inc	Shepaug	New	Housatonic	Conn.	1953	CG	1,412	139	I
MIDDLE ATLANTIC STATES										
Power Authority of the State of N Y	Sanderson & Porter; Uhl, Hall and Rich		New	St Lawrence	N Y	1954	CG CG	3,200 3,100	172 126	S
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	South Colton	New	Raquette	N Y.	1952	C&E	600	40	I
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Five Falls	New	Raquette	N Y	1953	C&E	530	50	I
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Rainbow Falls	New	Raquette	N Y.	1954	C&E	500	78	I
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Stake Falls	New	Raquette	N. Y	1955	C&E	600	50	I
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Stark	New	Raquette	N Y	1956	C&E	235	40	I
Rockland Light & Power Co		Cranamsville	New		N. Y.	1952	Note 6			I
Brownville Board Co		Brownville	Red.		N Y	1954				I
Gould Paper Co		Lyons Falls	Red		N Y	1953				I
N Y State Electric & Gas Corp		Cadyville	New		N Y	1954				I
EAST NORTH CENTRAL STATES										
Crystal Falls Light Dept		Crystal Falls	New		Mich	1953				I
St Louis Municipal Elec Lt & Wtr Pl		St Louis	Red		Mich	1953				I
Consumers Power Co			Red.		Mich	1953				I
Consolidated Water Pwr & Paper Co		Wisconsin Rapids	Red		Wis	1953				I
Kimberly-Clark Corp	Company engineering staff	Quinnesec	Red.	Menominee	Wis.	1954	CG	204	22	I
Kansas City Star		Park Falls	New		Wis	1954				I
Whiting Plover Paper Co		Stevens Point	Red.		Wis	1954				I
WEST NORTH CENTRAL STATES										
St Anthony Water Power Co	Pioneer Service & Engrg Co	Hennepin Island Unit No 5	Red.	Mississippi	Minn.	1954				I
Lanesboro Public Utilities		Lanesboro	Red.		Minn.	1954				I
Amana Woolen Mills		Amana	New		Iowa	1954				I
U S Corps of Engineers	U S Corps of Engr; Chas T Main Inc	Garrison	New	Missouri	N D.	1945	EF	12,000	210	I
U S Corps of Engineers	U S Corps of Engr; Chas T Main Inc	Oahe	New	Missouri	S D	1948	EF	9,300	242	I
U S Corps of Engineers	U S Corps of Engr; Erik Floor & Assoc	Fort Randall	New	Missouri	S D	1946	EF	10,500	160	I
U S Corps of Engineers	U S Corps of Engr, Harza Engrg Co	Gavins Point	New	Missouri	S D & Neb	1948	EF	8,700	74	I
SOUTH ATLANTIC STATES										
Appalachian Electric Power Co	American Gas & Elec Service Corp	Niagara	Red	Roanoke	Va.	1953				I
Virginia Electric & Power Co	Stone & Webster Engrg; Chas T Main, Inc	Roanoke Rapids	New	Roanoke	N C	1953	CG	3,050	72	S
Nantahala Power & Light Co	Aluminum Company of America	Bear Creek	New	E Fork Tuckasegee	N C	1952	EF,RF	740	215	I
Nantahala Power & Light Co	Aluminum Company of America	Tennessee Creek	New	E Fork Tuckasegee	N C	1952	EF,RF	810 335	185 135	I
Tapoco Inc	Aluminum Company of America	Chilhowee	New	Little Tennessee	Tenn	1955	EF,PF	1,410	32	I
Martel Mills		Lexington	Red.		S C	1953				I
Martel Mills		Cherokee Falls	Red		S C	1954				I
U S Corps of Engineers	U S Corps of Engineers; Erik Floor & Associates	Buford	New	Chattahoochee	Ga.	1950	Earth	1,630	192	I
Crisp County Power Commission	J E Sirrine Co and Emmet S Kirkpatrick	Flint River	New	Flint	Ga	1928	CG	450	30	I
Bonnette Milling Co		Macon	New		Ga	1953				I
Georgia Power Co	Georgia Power Co	Goat Rock	New	Chattahoochee	Ga	1954	CG	1,648	57	I
U S Corps of Engineers	U S Corps of Engineers	Jim Woodruff	New	Apalachicola	Fla	1947	CG	5,134	105	I
EAST SOUTH CENTRAL STATES										
Tennessee Valley Authority	Tennessee Valley Authority	Chatuge	New	Hiawassee	N C	1941	EF	2,350	144	I
Tennessee Valley Authority	Tennessee Valley Authority	Douglas	New	French Broad	Tenn	1942	CG&EF	1,705	202	S
Tennessee Valley Authority	Tennessee Valley Authority	Nottely	New	Nottely	Ga	1941	E&RF	2,300	184	I
Tennessee Valley Authority	Tennessee Valley Authority	Hiwassee	New	Hiwassee	N C.	1937	CG	1,255	308	S
								This unit also operates in reverse		
Tennessee Valley Authority	Tennessee Valley Authority	Ft Patrick Henry	New	S Fork Holston	Tenn	1951	CG	740	95	I
U S Corps of Engineers	U S Corps of Engr, Ampursen Engr Corp	Old Hickory	New	Cumberland	Tenn	1951	CG&EF	3,750	98	I
U S Corps of Engineers	U S Corps of Engineers	Cheatham	New	Cumberland	Tenn	1950	CG	495	75	I
WEST SOUTH CENTRAL STATES										
U S Corps of Engineers	U S Corps of Engineers	Table Rock	New	White	Ark	1952	CG&EF	6,388	250	I
U S Corps of Engineers	Harza Engineering Co	Blakely Mountain	New	Ouachita	Ark	1947	Earth	1,150	230	I
MOUNTAIN STATES										
U S Bureau of Reclamation	U S Bureau of Reclamation	Pole Hill	New	Colorado-Big Thompson	Colo	1950				S
U S Bureau of Reclamation	U S Bureau of Reclamation	Flat Iron	New	Colorado-Big Thompson	Colo	1951				
								This unit operates in reverse		
La Plata Electric Association	La Plata Electric Association	Pagosa Springs	Red.	San Juan	Colo	1953				I
Deseret Power Association		Torrey	New		Utah	1953				I
Bridger Valley Elec		Red Creek	New	Red Creek	Utah	1954				I
Truckee-Carson Irrigation Dist		Drop No 5	New		Nev	1954				I
Lower Valley Power & Light, Inc	Lower Valley Power & Light, Inc	Strawberry Creek	New	Strawberry Creek	Wyo	1953	CG	100	20	I
U S Bureau of Reclamation	U S Bureau of Reclamation	Alcova	New	North Platte	Wyo	1951	EF	753	255	I
U S Bureau of Reclamation	U S Bureau of Reclamation	Glendo	New	North Platte	Wyo	1954	EF	4,540	207	I
Montana Power Co	Ebasco Services, Inc	Kerr	New	Flathead	Mont	1938	CA	385	200	I
U S Bureau of Reclamation	U S Bureau of Reclamation	Canyon Ferry	New	Missouri	Mont	1949	CG	1,000	220	I
U S Corps of Engineers	Sverdrup & Parcel, Inc	Albeni Falls	New	Pend Oreille	Idaho	1951	CG	755	83	I
U S Bureau of Reclamation	U S Bureau of Reclamation	Palisades	New	Snake	Idaho	1952	EF	2,200	260	I
City of Soda Springs		Soda Creek No 4	New	Soda Creek	Idaho	1954				I

[1] The term "New" applies to a project on a site not developed before. "Redeveloped" indicates a project on a site that has been developed before and now has new purposes, generators or a new plant.

[2] CA concrete arch; C&E concrete and earth; CG concrete gravity; CG&EF concrete gravity and earth fill; CO, S&E concrete gravity slab & buttress; CO&E concrete slab and buttress; EF earth fill; E&RF earth and rock fill; E&RF earth and rock fill, RFPA earth and rock fill, concrete [illegible]; RFPA [illegible]; RFPF [illegible]

sector gates; S&R, sluiceways and rock fill; TC timber crib

[3] I, indoor; S, semi-outdoor; O, outdoor; U, underground

[4] AC – A. S. Cochrane's Mfg Co.

CAC – Canadian Allis-Chalmers Ltd
CGE – Canadian General Electric Co Ltd
CVL – Canadian Vickers Ltd
CWC – Canadian Westinghouse Co Ltd
DEC – Dominion Engineering Co Ltd
EC – Elliott Co
ES – Spanish Electric Co Ltd
[illegible] Electric Co of Canada Ltd

1955 Design Survey: Typical Hydroelectric

Compiled by F A Annett
Contributing Editor

Company or government agency	Design or consulting engineers	Project name	[1] New or redeveloped	River	State	Project started, date	[2] Dam type	Crest length, ft	Max height, ft	[3] Type of power
PACIFIC COAST STATES										
U. S. Corps of Engineers	U. S. Corps of Engineers	Chief Joseph	New	Columbia	Wash	1949	CG	2,315	235	I
U. S. Corps of Engineers	U. S. Corps of Engineers	McNary	New	Columbia	Wash	1947	CG&EF	8,000	157	I
U. S. Corps of Engineers	U. S. Corps of Engineers	The Dalles	New	Columbia	Wash & Ore	1951	CG			I
U. S. Corps of Engineers	U. S. Corps of Engineers	The Dalles Fishway	New	Columbia	Ore	1951				
PUD No. 1 Pend Oreille County	Harza Engineering Co	Box Canyon	New	Pend Oreille	Wash.	1952	SG	200	105	I
City of Seattle	Dr J L Savage	Ross	New	Skagit	Wash.	1937	CA	1,300	540	I
Centralia Municipal Light Dept		Nesqually No. 1	New	Nesqually	Wash	1953				I
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Chandler	New	Yakima	Wash.	1953	CG	768	8	I
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Chandler	New	Yakima	Wash.	1953	CG	768	8	I
California Oregon Power Co	Pioneer Service & Engrg Co	Lemolo No. 1	New	North Umpqua	Ore.	1953	RFCF	985	120	O
California Oregon Power Co	Pioneer Service & Engrg Co	Lemolo No. 2	New	North Umpqua	Ore.	1953	CS&B	195	25	O
U. S. Corp of Engineers	U. S. Corps of Engineers	Big Cliff	New	North Santiam	Ore.	1951	CG	295	172	I
U. S. Corps of Engineers	U. S. Corps of Engr; Stevens & Thompson Engrs	Lookout Point	New	Middle Fork Willamette	Ore.	1949	CG&EF	4,740	258	I
U. S. Corps of Engineers	U. S. Corps of Engineers	Dexter	New	Middle Fork Willamette	Ore	1953	EF	2,335	80	I
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Muphys	Red.	North Fork Stanislaus	Calif	1953	CG S&B			O
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Pit No. 4	New	Pit	Calif	1953	CG S&B	415	74	
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Poe	New	Feather	Calif	1954	CG	400	50	S
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Butt Valley	New	Feather	Calif		HF	1,250	130	I
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Caribou No. 2	New	Feather	Calif.		HF	1,370	80	I
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Belden	New	Feather	Calif.		CG	505	150	I
Los Angeles Dept of Water & Power	Prof F J Converse, Ralph R Proctor, Chas T Leeds & Chester Marhave	Pleasant Valley	New	Owens	Calif	1954	EF	530	116	O
Imperial Irrigation District	Clapp & Hill Inc	Pilot Knob	New	All-American Canal	Calif.	1954				I
U. S. Corps of Engineers / U. S. Bureau of Reclamation	U. S. Bureau of Reclamation / U. S. Corps of Engineers	Folsom	New	American	Calif	1947	CG&EF	10,230	340	S
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Nimbus	New	American	Calif	1952	CG	813	50	S
U. S. POSSESSIONS										
Petersburg Light & Power Co			New		Alaska	1954				I
N. Y. Alaska Gold Dredging Corp	Company engineers	Nyac	New	Tuluksak	Alaska	1954				S
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Eklutna	New	Lake Eklutna	Alaska	1951	EF			I
Ketchikan Public Utilities	W. D. Shannon & Associates	Beaver Falls	New	Beaver Falls Creek	Alaska	1953	RF	140	31	I
Metlakatla Indian Community	Hubbell & Walker Engrg Corp	Purple Lake	New		Alaska	1954				I
Puerto Rico Water Resources Authority	Jackson & Moreland	Yauco No. 1	New	Guayo	P. R.	1953	CG	585	190	I
Puerto Rico Water Resources Authority	Jackson & Moreland	Yauco No. 2	New	Yuaco	P. R.	1952	CG	591	179	I
Panama Canal Co		Gatun Hydro	Red	Chagres	Canal Zone	1954				I
CANADA					Province					
Union Electric Light & Power Co Ltd		Port Union	New	Trinity	N. F.	1954				I
Iron Ore Company of Canada Ltd	Montreal Engineering Co	Menihek	New	Ashuanipi	Lab. N. F.	1952	CG&EF	24,000	60	I
Nova Scotia Light & Power Co	Montreal Engrg Co & N S Light & Pwr Co	Nictaux Lake	Red.	Nictaux	N. S.	1952	REF	1,000	90	I
Nova Scotia Power Commission	K. E. Whitman	Lower Great Brook	New	Mersey	N. S.	1954	EFCW	2,270	25	I
New Brunswick Electric Power Comm.	Shawinigan Engineering Co	Beechwood	New	St. John	N. B.	1955	CG	550	100	I
Quebec Hydro-Electric Commission	H. G. Acres & Co, Frazer Brace Engrg	Rapide No. 2	New	Ottawa	Que	1951	CG	1,026	110	I
Quebec Hydro-Electric Commission	H. G. Acres & Co	Bersimis-Lac Casse	New	Bersimis	Que	1953	RF	2,215 / 1,342	200 / 230	U
Shawinigan Water & Power Co	Shawinigan Engineering Co	Trenche	New	St. Maurice	Que	1946	CG			I
Shawinigan Water & Power Co	Shawinigan Engineering Co	Rapide Blanc	New	St. Maurice	Que	1930	CG		132	I
Shawinigan Water & Power Co	Shawinigan Engineering Co	La Tuque	New	St. Maurice	Que	1939	CG	1,325	131	I
Gatineau Power Co		Paugan	New	Gatineau	Que	1926	CG			I
Northern Quebec Power Co	Power Corp of Canada Ltd	Quinze	New	Ottawa	Que	1921	S&R	2,500	60	I
Lake Megantic Municipal Corp		Graythurst	New	Chaudiere	Que	1952				I
Gulf Power Co	Stacker, Horner & Co	Marguerite	New	Marguerite	Que	1951	CG	450	120	I
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Sir Adam Beck-Niagara No. 2	New	Niagara	Ont	1950				I
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Sir Adam Beck-Niagara No. 2	New	Niagara	Ont	1954	RF	24,367	68	O
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Pine Portage	New	Nipigon	Ont	1947	CG	3,000	150	I
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Manitou Falls	New	English	Ont	1953	CG	1,069	40	I
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Canadian Powerhouse	New	St Lawrence	Ont	1954	CG / CG	3,200 / 3,100	172 / 126	S
Ontario Minnesota Pulp & Paper Co Ltd	Company engineers	Fort Frances	Red	Rainy	Ont	1954	CG	700	50	I
Spanish Rivers Power Co	Harza Engineering Co	McPhail Falls	New	Michipicoten	Ont	1951	CRE	520	70	I
Manitoba Hydro-Electric Board	H. G. Acres & Co	McArthur Falls	New	Winnipeg	Man	1952	CG&EF	31,700	30	I
Calgary Power Co	Montreal Engineering Co	Bearspaw	New	Bow	Alta	1953	CG&EF	1,200	66	I
Calgary Power Co	Montreal Engineering Co	Ghost Extension	New	Bow	Alta	1952				
Calgary Power Co	Montreal Engineering Co	Interlakes	New	Kananaskis	Alta	1954	EF	420	70	I
Calgary Power Co	Montreal Engineering Co	Pocaterra	New	Kananaskis	Alta	1954	REF	2,000	90	I
Aluminum Company of Canada	B. C. International Engrg Co	Kemano	New	Nechako	B. C.	1951	RF	1,550	319	U
British Columbia Electric Co	British Columbia Electric Co	Bridge River	New	Bridge	B. C.	1945	EF	1,000	282	I
Thurston Power & Paper Co	B. C. International Engrg Co	Seton	New	Seton & Cayoosh Creek	B. C.	1954	EC / CG	900 / 450	20 / 25	I
British Columbia Electric Co	B. C. Engineering Co / Sir Alexander Gibb & Partners & Gore & Storrie	Cheakamus	New	Cheakamus	B. C.	1954	EF	2,000	90	I
British Columbia Power Commission	B. C. Power Comm. H. G. Acres & Co	Pointledge	Red	Pointledge	B. C.	1953	CG	200	15	I
British Columbia Power Commission	B. C. Power Commission	Spillimacheen	New	Spillimacheen	B. C.	1953	CG	120	35	I
Shawinigan Water & Power Co	H. G. Acres & Co	Cariboo	New	Quesnel	B. C.	1955				
Consolidated Mining & Smelting Co	Stone & Webster Canada Ltd	Arrowhead	New	Pend Oreille	B. C.	1951	CG	950	250	I
Yukon Electrical Co Ltd	Power Corp of Canada Ltd	Five Finger	Rap		B. C.	1954				I
Yukon Electrical Co Ltd	Peters & Dow Engineers	Porter Creek	New	Porter Creek	Yukon	1955	EF	220	25	I

[1] The term "New" includes run-of-river and pondage sites for power plants where the river flow is regulated by storage at sites not previously developed for power. Redevelopment includes all sites where power plants have been in operation before but where new structures, penstocks, generators or other units

[2] EFDA, Earthfill dam; CG&EF, concrete and earth fill; concrete gravity; CG&EF, concrete gravity and earthfill; CA, CA&S concrete gravity arch & buttress; CS&B, concrete slab and buttress; EF, earthfill; EF&RF, earthfill and rockfill; E&RF, earthfill and rockfill; EFCA, earthfill with concrete core; EFCW, earthfill with concrete core wall; REF, rockfill with earthfill core; RF, rockfill; SG, concrete gravity; HF, hydraulic fill; CRE, concrete rock embankment; RFCF, rockfill concrete face; SR, sector gates; S&R, sluiceways and rock fill; TC, timber crib

[3] I, indoor; S, semi-outdoor; O, outdoor; U, underground

[4] AC = Allis-Chalmers Mfg Co
BC = Baldwin-Lima-Hamilton Corp

CAC = Canadian Allis-Chalmers Ltd
CGE = Canadian General Electric Co Ltd
CVL = Canadian Vickers Ltd
CWC = Canadian Westinghouse Co Ltd
DEC = Dominion Engineering Co Ltd
EC = Elliott Co
EE = English Electric Co Ltd
EEC = English Electric Co of Canada Ltd

Plants in the United States and Canada

Year of operation	Initial capacity, hp	Additional capacity, no. of units	Date of added capacity	Ultimate capacity, hp	No. of units installed	Waterwheel capacity, hp	Waterwheel type	Speed, rpm	Static head, ft	Design head, ft	[4]Waterwheel manufacturer	[4]Governor manufacturer	Scroll case, concrete or steel	Penstock valve type	Generator capacity, kva	Synchronizing, manual or automatic	[5]Thrust-bearing location	Design power factor	Kilovolts	[4]Generator manufacturer
1955	4 [illegible] 000	2	195[illegible]	7 [illegible] 000	1-3	[illegible] 000	Francis	[illegible]	129-145	136	NN	AC	Plate steel	Head gate	62 [illegible]	Manual	BG	0.95	13.8	WE
					4	62 000	Francis	150	129-148	136	MC	W	Plate steel	Head gate	62 [illegible]	Manual	BG	0.95	13.8	
					5	[illegible] 000	Francis	514	129-148	136	PW	PW	Plate steel	Head gate	3 000	Manual	AG	0.80	4.16	EC
1953	4 [illegible] 000	1-3	[illegible]	[illegible]	1-3	[illegible] 000	Kaplan	[illegible]	92-62	80	MC	AC	Concrete	Head gate	73 664	Manual	BG	0.95	12.5	GE; EE
		4	1950		4	21 000	Francis	277	92-62	80	PW	W	Concrete	Head gate	3 750	Manual	AG	0.80	4.16	EM
					5-6	42 000	Kaplan	92	94-60	81	BL	PW	Concrete	Head gate	82 105	Manual	BG	0.95	13.8	GE
1957	1 [illegible] 000			2 [illegible] 000	1-2	[illegible] 000	Kaplan	200	91-60	74	AC	PW	Concrete	Head gate	74 200	Manual	AG	0.95	13.8	WE
					3	4 500	Francis	514	91-59	81	PW	W	Service units		3 000	Manual	AG	0.80	4.16	
1954	85 000			222 500	4	74 [illegible]	Kaplan	150	46-20	41	AC	W	Concrete	Head gate	16 667	Manual	BG	0.90	13.8	EC
1952	540 000	1	1958	660 000	4	140 000	Francis	150		355	3 GL, 1 NN	W	Welded pl st	Butterfly	100 000	Auto. or man.	AG	0.85	13.8	WE
1955	[illegible]			[illegible]	1	5 500	Francis	400		205	MS		Plate steel	Head gate	6 250	Manual	AG	0.80	2.4	WE
1955	[illegible] 000			17 000	2	6 500	Francis	240	126-107	118	JL	PW	Plate steel	Head gate	6 315	Manual	AG	0.95	4.16	EM
1955	6 200			6 200	1	6 600	Francis	240	126-107	118	JL		Plate steel	Head gate	Drives Worthington pumps					
1955	42 000			42 000	1	42 000	Francis	400	266-745	710	AC	W	Welded pl st	Butterfly	30 527	Automatic	AG	0.95	11.5	WE
1955	42 000			42 000	1	42 000	Francis	400	727-704	709	AC	W	Welded pl st	Butterfly	34 737	Automatic	AG	0.95	11.5	WE
1954	24 500			24 500	1	25 500	Francis	165.4	96-75	91	BL	W	Plate steel	Head gate	20 000	Automatic	BG	0.90	13.8	WE
1954	120 [illegible]	2	1956	162 500	5	62 500	Francis	128.6	238-126	195	PW	W	Plate steel	Head gate	42 222	Manual	BG	0.90	13.8	GE
1955	20 700			20 700	1	20 700	Kaplan	125.6	58-51	55	NN	W	Concrete	Head gate	15 000	Automatic	BC	1.00	13.8	GE
1954	5 300			5 300	1	5 300	Impulse	400		690	PW	PW		Spherical	4 500	Automatic	AC	0.85	2.4	GE
1955	128 400			128 400	3	42 000	Francis	225	382-367	340	NN	W	Welded pl st	Butterfly	50 000	Manual	AG	0.90	13.8	GE
1956	134 400			134 400	3	23 000	Francis	225	477	414				Butterfly	63 000	Automatic	AG	0.90	13.8	GE
	[illegible]			[illegible]	1	55 000	Francis	205	380	313					48 000	Automatic	AG	0.90	13.8	
	276 000			276 000	2	75 000	Impulse	200	1149	1100				Butterfly	63 000	Automatic	AG	0.90	13.8	
	150 000			150 000	2	75 000	Francis	300	770	685				Butterfly	65 000	Automatic	AG	0.90	13.8	
1956	4 200			4 200	1	4 200		257	76-52	68			Plate steel	Butterfly	4 000	Manual	HS	0.80	4.16	
1956	52 600			52 600	2	24 300	Kaplan	128.6	49	48	BL		Concrete	Head gate	20 000	Automatic	HS	0.83	13.8	EC
1955	220 000	1	1958	220 000	2	74 000	Francis	163.7	340-145	300	NN		Plate steel	Head gate	50 000	Manual	AG	0.90	13.8	WE
1955	16 800			16 800	2	9 400	Kaplan	150	45-20	42	MS	PW	Concrete	Head gate	7 500	Manual	AG	0.90	4.16	EC
1955	3 [illegible]			3 [illegible]	1	3 120	Impulse	600		1000	AC	W			2 500	Manual	HS	0.80	4.1	AC
1955	500	1	1955	1 [illegible]	1-2	500	Francis	600	71	71	MS	L	Plate steel	Head gate	350	Manual	HS	0.80	4.1	AC
					3	730	Francis	514	71	71	JL	W	Plate steel	Head gate	825	Manual	HS	0.80	4.1	WE
1955	50 000			50 000	2	25 000	Francis	600	820-780	800	NN	W	Cast steel	Butterfly	16 667	Manual	AG	0.90	6.9	PO
1954	1 200			1 200	1	3 600	Impulse	360	800-775	760	MS	W		Rotovalve	2 500	Manual	HS	0.80	2.4	GE
1956	3 630			3 [illegible]	2	1 745	Francis	900	321-287	300	JL	W	Cast steel	Butterfly	1 250	Manual	HS	0.80	2.4	EC
1955	34 000			34 000	1	34 000	Impulse	257	878-793	740	PW	W	Cast steel	Spherical	25 000	Auto. or man.	AG	0.80	13.8	WEI
1954	13 500			13 500	2	6 750	Francis	514	348-240	310	JL	W	Cast steel	Rotovalve	5 000	Auto. or man.	AG	0.80	4.16	WEI
1956	13 320			20 070	1-2	4 440	Francis	257		75	PW	PW	Concrete	Head gate	3 750	Auto. or man.	AG	0.80	6.9	GE
					3	6 750	Francis	199.5		75	PW	PW	Concrete	Head gate	5 625	Auto. or man.	AG	0.80	6.9	GE
1955	2 000			4 600	1	2 000	Francis	720		260					1 800	Manual	HS	0.80	6.9	CGE
1954	12 000			12 000	2	6 000	Propeller	150	34	34	CAC	W	Concrete	Head gate	5 000	Manual	AG	0.85	6.9	CWC
1954	9 000			9 000	1	9 000	Francis	600	405	382	DEC	W	Cast steel	Butterfly	6 500	Automatic	AG	0.80	6.9	CWC
1955	6 240			9 120	2	3 120	Kaplan	128.5	24	22	MSC	W	Concrete	Head gate	2 500	Automatic	AG	0.90	6.9	CWC
1957	90 000			135 000	2	45 000	Kaplan	309.1	67-20	57	DEC	SGE	Concrete	Head gate	40 000	Manual	BG	0.80	13.8	CGE
1954	48 000	1	1955	64 000	3	16 000	Francis	120	65-54	58	DEC	W	Concrete	Head gate	15 000	Manual	BG	0.85	6.9	CWC
1956	600 000			1 200 000	4	150 000	Francis	277	875-850	785	EEC	W	Plate steel	Spherical	120 000	Automatic	AG	0.95	13.8	MVE
1950	325 000	1	1955	390 000	5	65 000	Francis	128.6	160	160	DEC	W	Plate steel	Head gate	52 000	Automatic	AG	0.90	13.8	CGE
1932	200 000	1	1955	244 500	5	40 000	Francis	109.1	119-93	109	DEC	DEC	Plate steel	Head gate	36 000	Manual	BG	0.85	11.0	CWC
					6	44 500	Francis	109.1	119-93	105	DEC	W	Plate steel	Head gate	36 000	Manual	BG	0.85	11.0	CGE
1940	178 000	1	1955	221 500	5	44 500	Francis	109.1	114-104	114	DEC	DEC	Plate steel	Head gate	40 000	Manual	AG	0.90	11.0	CGE
					6	45 000	Francis	109.1	114-104	114	DEC	W	Plate steel	Head gate	40 000	Manual	AG	0.90	11.0	CGE
1928	204 000	1	1955	285 000	5	34 000	Francis	225	136	133	DEC	W	Plate steel	Head gate	28 500	Manual	AG	0.80	6.6	CWC
					6	47 000	Francis	225.5	136	133	DEC	W	Plate steel	Head gate	36 000	Manual	AG	0.90	6.6	CGE
		4	1923-28		4	12 500	Francis	[illegible]	76-90	90	DEC		Plate steel	Head gate	10 000	Manual	AG	0.80	11.00	SEC
1923	110 000	5	1950	139 000	5	32 500	Francis	207	76-90	90	CAC	W	Welded pl st	Head gate	32 500	Manual	AG	0.80	11.00	CGE
		6	1955		6	34 500	Francis	167	76-93	90	CAC	W	Welded pl st	Head gate	30 500	Manual	AG	0.80	11.00	CGE
1954	4 500			4 500	2	1 250	Francis	300	64	64	DEC		Plate steel	Head gate	2 000	Manual	AG	0.85	2.5	NEC
1954	26 000			26 000	2	12 000	Francis	200	122-70	100	CAC		Plate steel	Butterfly	11 000	Manual	AC	0.80	13.8	CGE
1954	1 260 000	2	1954	1 680 000	12	105 000	Francis	150	305-254	292	DEC	W	Plate steel	Head gate	62 000	Automatic	AG	0.95	13.8	GCGE
		6	1955												80 000	Automatic	BG	0.95	13.8	GCWC
1956	272 000			272 000	6	45 500	Kaplan	92.3	57-40	85	EEC	W	Plate steel	Head gate	51 000	Automatic	BG	0.95	13.8	CWC
					These units operate in reverse as 55,000-hp 4600-cfs 75-ft head pumps. Head range 59 to 90 ft															
1950	80 000	3	53-54	172 000	2	41 000	Francis	109.1	116-106	105	CAC	W	Plate steel	Head gate	33 000	Manual	AG	0.90	13.8	CWC
					3	45 000	Francis	109.1	116-106	105	MSC	W	Plate steel	Head gate	38 000	Manual	BG	0.90	13.8	CWC
1956	74 000			74 000	4	18 500	Propeller	150	59-44	54	DEC	W	Concrete	Head gate	16 000	Automatic	AG	0.90	13.8	CGE
1958	1 200 000			1 200 000	8	75 000	Propeller	64.7		81	EEC		Concrete	Head gate	60 000	Automatic	BG	0.95	13.8	GWC
					9	75 000	Propeller	64.7		81	EEC		Concrete	Head gate	60 000	Automatic	BG	0.95	13.8	CGE
1955	16 000			16 000	3	2 000	Propeller	200	29	29	CVC	W	Concrete	Head gate	2 000	Manual	AG	0.80	6.9	CGE
1954	15 000			15 000	2	7 500	Kaplan	200	51-47	45	MSC	W	Concrete	Head gate	5 000	Manual	AG	1.00	11.5	CGE
1954	80 000	4	1955	80 000	8	10 000	Propeller	85.7	23.5	23.5	DEC	W	Concrete	Head gate	8 500	Automatic	BG	0.90	6.9	CGE
1954	23 600			23 600	1	23 600	Kaplan	128.6	56-34	48	KMW	KMW	Concrete	Head gate	18 000	Automatic	BG	0.85	13.8	CWC
1954	57 450			57 450	3	30 000	Francis	150	99-90	107	EEC	W	Plate steel	Head gate	25 000	Automatic	BG	0.85	13.8	CWC
1955	6 900			6 900	1	6 900	Francis	257	114-74	98	CAC	W	Plate steel	Butterfly	5 600	Automatic	AG	0.90	4.16	CWC
1955	18 400			18 400	1	18 400	Francis	240	226-188	185	CAC	W	Welded pl st	Butterfly	15 000	Automatic	BG	0.90	13.8	CWC
					1	140 000	Impulse[8]	327	2570	2500	DEC	W	Cast steel	Spherical	106 000	Manual	AG	0.80	13.8	EEC
					2	140 000	Impulse[8]	327	2570	2500	CAC	W	Cast steel	Spherical	106 000	Manual	AG	0.80	13.8	CGE
1954	420 000	1	1955	2 240 000	3	140 000	Impulse[8]	327	2570	2500	PW&VEW	PW	Cast steel	Spherical	106 000	Manual	AG	0.80	13.8	CWC
					4	140 000	Impulse[8]	327	2570	2500	DEC	W	Cast steel	Spherical	106 000	Manual	AG	0.80	13.8	CGE
1958	188 000		1959	620 000	4	90 000	Impulse[7]	200		1130	PW&VEW	3W, 1PW	Cast steel	Spherical	60 000	Manual	AG	0.90	13.8	CWC
1956	58 500			58 500	1	58 500	Francis	120	167-129	147	CAC	W	Plate steel	Head gate	40 000	Automatic	BG	1.00	13.8	CWC
1957	190 000			190 000	2	95 000	Impulse		1125-1055	1070			Cast steel	Butterfly	80 000	Automatic		0.875	13.8	
1955	33 000			33 000	1	33 000	Francis	277	360-355	340	CAC	W	Plate steel	Pivot	30 000	Automatic	AG	0.90	13.8	CWC
1955	9 500			9 500	1	3 000	Francis	600	230-215	227	EEC	W	Plate steel	Pivot	1 750	Manual	HS	0.80	4.16	EEC
					2	4 250	Francis	600	230-215	227	EEC	W	Plate steel	Pivot	2 750	Manual	HS	0.80	4.16	EEC
1955	30 000			120 000	2	30 000	Francis	138.5	126-75	120.5			Plate steel	Butterfly	15 000	Automatic	BG	0.90	13.8	
1954	240 000			480 000	2	120 000	Francis	120	179-172	170	DEC	W	Plate steel	Butterfly	90 000	Manual	BG	0.85	13.8	CWC
1955	2 140			2 140	1	2 140	Francis	900	267	225	EEC	W	Welded pl st		1 650	Manual	HC	0.80	4.16	EEC
1955	850			850	1	850	Francis	1200	211	211	CAC	G&G	Plate steel	Head gate	750	Auto. or man.	AG	0.80	2.30	CWC

EM – Electric Machinery Mfg Co
GE – General Electric Co
G&C – Gilkes & Gordon Ltd
JL – James Leffel & Co
KMW – KMW of Sweden
L – Lombard Governor Co
MS – S Morgan Smith Co
MSC – S Morgan Smith Canada Ltd
MVE – Metropolitan Vickers Electrical Co Ltd
NEC – Northern Electric Co Ltd
NN – Newport News Shipbuilding & Dry Dock Co
PO – Pacific Gerlinton Co
PW – Pelton Wate Wheel Co
SEC – Swedish Electric Co
SGE – Swedish General Electric Co
VEW – Vancouver Iron Works Ltd
W – Woodward Governor Co
WE – Westinghouse Electric Corp
WEI – Westinghouse Electric International Co

[5]AG indicates thrust bearing is above generator rotor, BG thrust bearing is below generator rotor, HC, horizontal-shaft machine

[6]Dam, tunnels with steel pipe conduits are being built by the New York Board of Water Supply as part of the Delaware River water system.

[7]Vertical-shaft, 6-nozzle type.

[8]Vertical-shaft, 4-nozzle type

Government-Agency Hydroelectric Plants

(Does not include municipal plants)

Government agency	Project	State or Possession	River	Ultimate capacity, hp	Initial capacity, hp	Installed capacity, hp	On order or being installed, hp
U S Bureau of Reclamation	Eklutna	Alaska	Lake Eklutna	50 000	50,000		50,000
	Grand Coulee	Wash	Columbia	3,102 900	539,000	3,102,000	
	Hungry Horse	Mont.	S F Flathead	420,000	420,900	420,000	
PUD No 1 Chelan County	Rock Island	Wash.	Columbia	288,000	84,000	288,000	
U S Corps of Engineers	Bonneville	Ore & Wash	Columbia	729,000	137,000	729 000	
	Big Cliff	Ore	North Santiam	26 500	26,500	26,500	
	Lookout Point	Ore	N F k Willamette	157,500	157,500	52,500	105,000
	Detroit	Ore	North Santiam	140,000	140 000	140,000	
	Chief Joseon	Wash	Columoia	2,707,300	1,607 000		1,607,000
	Dalles	Ore & Wash	Columoia	2,770,200	1,779,800		1,779,800
	McNary Dam	Ore & Wash	Columbia	2,226,000	1,565,200	452,200	1,113,000
	Albeni Falls	Idano	Pend Oreille	58 900	53,800		58,800
PUD No 1 Pend Oreille County	Box Canyon	Wash	Pend Oreille	122,500	98,000		98,000
U S Bureau of Reclamation	Anderson Ranch	Idaho	Boise	55,500	37,000	37,000	
	Minidoka	Idano	Snake	29,500	9,000	19,500	
	Palisades	Idano	Snake	158,000	158,000		158,000
	Shasta	Calif	Sacramento	522 000	419,000	522,000	
	Keswick	Calif	Sacramento	102,000	102 000	102,000	
	Folsom	Calif	American	225,000	225,000		225,000
Imperial Irrigation District	Drop No 4	Calif	All Am Canal	28,300	13,300	28 300	
	Pilot Knob	Calif	All Am Canal	52,600	52,600		52,600
U S Bureau of Reclamation	Parker Dam	Ariz & Calif	Colorado	160,000	120,000	160,000	
	Davis Dam	Ariz & Calif	Colorado	311 000	311,000	311,000	
	Hoover Dam	Ariz & Nev	Colorado	1,857,000	522 200	1,742,000	
	Elephant Butte	N M	Rio Grande	34 500	34,500	34,500	
	Green Mountain	Colo	Blue	30,000	30,000	30,200	
	Estes Park	Colo	Colo Big Thompson	63 000	63,000	63 300	
	Pole Hill	Colo	Colo Big Thompson	47 500	47 500	47 500	
	Flatiron	Colo	Colo Big Thompson	108 000	108,000	108,000	
	Kortes	Wyo	North Platte	55 500	55,500	55,000	
	Alcova	Wyo	North Platte	53 000	53,000		53,000
	Glendo	Wyo	North Platte	33 500	33,500		
	Seminoe	Wyo	North Platte	45 000	45,000	45 000	
	Canyon Ferry	Mont.	Missouri	70,500	70,500	70,500	
U S Corps of Engineers	Fort Peck	Mont.	Missouri	150,000	70,000	120,000	
Platte Valley Public Pwr & Irr Dist	Sutherland	Neb	North Platte	35 000	35 000	35,000	
Loup River Public Power Dist	Columbus	Neb	Loup	54,000	54 000	54,000	
Central Neb Public Pwr & Irr Dist	Jeffery Canyon	Neb	Platte	26,000	25 000	26,000	
	Johnson No 1	Neb	Platte	26,000	25 500	26,000	
	Johnson No 2	Neb	Platte	50,000	25,000	25,000	
U S. Corps of Engineers	Fort Randall	S D	Missouri	460,000	460,000	57,500	402,500
	Gane	S D	Missouri	485,000	194 000		
	Garrison	N D.	Missouri	440,000	440,000		440,000
	Gavins Point	S D & Neb	Missouri	162,000	152 000		162,000
	St. Mary's Falls	Mich.	St. Mary's	72,750	23,925	23,925	
	Norfolk	Ark	North Fork	168 000	42,540	84 540	
	Blakely Mountain	Ark	Ouachita	104,000	104,000	104,000	
	Bull Shoals	Ark	White	419,000	211 000	211,000	
	Table Rock	Ark	White	272 000	272 000		136,000
	Narrows	Ark	Little Missouri	35 000	24,000	24,000	
Grand River Dam Authority	Pensacola Dam	Okla	Grand	120 750	90,750	120,750	
U S. Corps of Engineers	Fort Gibson	Okla.	Grand	96 000	64 000	64 000	
	Tenkill Ferry	Okla	Illinois	47 000	47 000	47 000	
	Dennison Dam	Okla & Texas	Red	282 080	56,080	114,080	
Lower Colorado River Authority	Buchanan Dam	Texas	Colorado	51,900	34 600	51,900	
	Marshall Ford	Texas	Colorado	90,000	90 000	90,000	
	Marble Falls	Texas	Colorado	42 000	42,000	42 000	
Brazos River Conserv & Reclam Dist	Possum Kingdom	Texas	Brazos	51 000	34 000	34 000	
International Boundary & Water Comm	Falcon Dam	Texas & Mex	Rio Grande	38,500	38 500	38,500	
U S Corps of Engineers	Whitney Dam	Texas	Brazos	41,400	41,400	41 400	
	Wolf Creek	Ky	Cumberland	377,000	377 000	377 000	
Tennessee Valley Authority	Kentucky	Ky	Tennessee	220 000	176 000	220 000	
	Pickwick	Tenn	Tennessee	302 000	96 000	302 000	
	Wilson	Ala	Tennessee	610 000	206 000	610 000	
	Wheeler	Ala	Tennessee	360 000	90,000	360,000	
	Guntersville	Ala	Tennessee	141 000	102 000	141 000	
	Hales Bar	Tenn	Tennessee	140 000	72 000	140 000	
	Chickamauga	Tenn.	Tennessee	144 000	108 000	144,000	
	Watts Bar	Tenn	Tennessee	210 000	126 000	210 000	
	Norris	Tenn	Clinch	132 000	132 000	132 000	
	Fort Loudoun	Tenn	Tennessee	176,000	88 000	176,000	
	Cherokee	Tenn	Holston	166 000	83 000	166 000	
	Douglas	Tenn	French Broad	154 000	83 000	154 000	
	South Holston	Tenn	South Holston	49 500	49 500	49,500	
	Pat Patrick Henry	Tenn	South F Holston	50 000	50 000	50,000	
	Boone	Tenn	South F Holston	103 500	103,500	103 500	
	Watauga	Tenn	Watauga	69 000	69 000	69 000	
	Fontana	N C.	Little Tennessee	274 000	183 000	274 000	
	Apalachia	Tenn	Hiwassee	105 000	105 000	105 000	
	Hiwassee	N C	Hiwassee	180 000	30 000	80 000	80,000
	Ocoee No 3	Tenn	Ocoee	33,500	33,500	33 500	
	Upper Blue	Va & N C	Roanoke	290 000	290 000	290 000	
	Central Plant	Tenn	Caney Fork	188 750	188 750	188,750	
	Center Hollow	Tenn	Obey	75 000	50 000	75 000	
U S Corps of Engineers	Old Hickory	Tenn	Cumberland	180 000	180 000		180,000
	Cheatham	Tenn	Cumberland	50 000	50,000		50,000
	Alabama	Ga	Etowah	180 900	102 900	102,900	
	Buford	Ga	Chattahoochee	118 400			118 400
	Lower Hogansville	Ga	Chattahoochee	42 000			42,000
	Clarks	Ga & S C	Savannah	368 500	368 500	368 500	
U S Dept of Int Bur of Rec & Indians	Pactola Dam	S D	Rapid	215 000	173 000	173 000	
Dept of Int Bur of Rec & Indians	Elephant Butte	N M	Rio Grande	30 000	22 000	22 000	
Total Capacity				26 033 000	19 075 400	15,432,829	6 955 000

NOTE: [illegible] 1,274,000 [illegible]