1953 Design Survey of Typical

PLAINTIFF'S EXHIBIT
WH-1049

Compiled by B G A Skrotzki, Associate Editor

Company	Location	Plant name	Consulting engineers	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 sq ft: Boiler & WW	BOILERS: Surface, 1000 sq ft: Superheater	Heat release, 1000 Btu per cu ft per hr	Furnace bottom
Boston Edison Co	North Weymouth, Mass	Edgar	Jackson & Moreland	7-54	1450	1000	1000	1	514	CE	13.8	33.0	18.5	DB
Carolina Power & Light Co	Wilmington, N C	Wilmington	Ebasco Services Inc	1954	1450	1000		1	1000	CE	36.7	—	15.1	DB
Consumers Power Co	Erie, Mich	Justin R Whiting	Commonwealth Associates Inc	11-53	1450	1000	1000	1	850	BW	17.1	70.0	15.7	DB
Florida Power & Light Co	South Florida	Undetermined	Ebasco Services Inc	7-55	1450	1000	1000	1	1000	CE	40.4	56.5	17.6	DB
	Cutler, Florida	Cutler	Ebasco Services Inc	10-54	1250	950		1	550	CE	27.0	—	13.1	DB
Louisville Gas & Electric Co	Louisville, Ky	Cane Run	Pioneer Service & Engrg Co	3-54	1450	1000		1	820	FW	38.9	17.1	14.7	DB
Monongahela Power Co	Albright, W Va	Albright	Sanderson & Porter	9-54	1450	1000	1000	1	1000	CE	....	75.0	14.1	DB
Oklahoma Gas & Electric Co	W Oklahoma City, Okla	Mustang	Sargent & Lundy	1955	1450	1000	1000	1	725	BW	12.5	—	19.7[1]	DB
Pennsylvania Power Co	West Pittsburgh, Pa	New Castle	Commonwealth Associates Inc	10-52	1450	1000	1000	1	690	BW	13.7	49.8	13.0	DB
Rochester Gas & Electric Corp	Rochester, N Y	Russell	Gilbert Associates Inc	1953	1450	1000	1000	1	470	CE	41.4	31.1	20.2	DB
Southwestern Public Service Co	Amherst, Texas	Plant "X"		1955	1450	1000	1000	1	800	CE	18.6	—	22.5[1]	DB
	Sunray, Texas	Moore County		1954	350	900		1	500	CE	33.6	—	29.0[1]	DB
	Denver City, Texas	Denver City[8]	J F Pritchard & Co	1954	850	900		1	500	CE	33.6	—	29.0[1]	DB
Virginia Electric & Power Co	Portsmouth, Va	Portsmouth	Stone & Webster Engrg Corp	8-54	1450	1000	1000	1	750	CE	31.7	49.8	25.0	DB
West Penn Power Co	Springdale, Pa	Springdale	Sanderson & Porter, G W Saathoff	1954	1450	1000	1000	1	950	BW	15.8	56.8	15.3	DB
Wisconsin Power & Light Co	North Beloit, Wis	Rock River	Sargent & Lundy	11-53	1450	1000	1000	2	525	BW	13.0	32.3	39.4[1]	
Cambridge Electric Light Co	Cambridge, Mass	Kendall Square	Gilbert Associates, Inc	1954	1320	910		1	300	BW	18.3	11.6	20.3	DB
California Electric Power Co	Highgrove, Calif	Highgrove	Fluor Corp	10-53	1250	950		1	425	CE	16.7	15.0	22.9	DB
				1955	1250	950		1	425	CE	16.7	15.0	22.9	DB
Duquesne Light Co	Elrama, Pa	Elrama		10-53	1300	1000	1000	1	875	BW	29.7	49.6	14.9	DB
Columbus & Southern Ohio Electric Co	Athens, Ohio	E M Poston	Ebasco Services Inc	11-53	1250	950		1	625	CE	26.7	17.7	17.5	DB
Indianapolis Power & Light Co	W Martinsville, Ind	White River	Gibbs & Hill Inc	12-53	1250	950		1	600	CE	25.4	16.9	18.5	DB
Pennsylvania Power & Light Co	W Martins Creek, Pa	Martins Creek	Ebasco Services Inc	5-54	1250	950		1	1200	FW	72.2	19.3	14.2	DB
				5-56	1250	950		1	1200	FW	72.2	19.3	14.2	DB
Public Service Co of New Hampshire	Portsmouth, N H	Schiller	Jackson & Moreland	9-53	1250	950		1	425	FW	16.0	11.6	20.6	DB
				7-55	1250	950		1	425	FW	16.0	11.6	20.6	DB
Union Electric Co of Missouri	St. Louis County, Mo	Meramec		4-54	1250	950	950	1	925	CE	44.5	50.0	12.8	DB
Missouri Public Service Co	Pleasant Hill, Mo	Ralph Green	Burns & McDonnell Engrg Co	12-53	1050	915		1	200	BW	15.9	8.5	18.4	DB
Public Service Co of Oklahoma	Wasnita, Okla	Southwestern	Sargent & Lundy	2-54	900	900		1	690	BW	36.3	11.8	24.3[1]	DB
Tampa Electric Co	Tampa, Fla	Hookers Point[4]	Stone & Webster Engrg Corp	3-53	875	900		1	505	BW	29.1	11.2	31.3	
Western Light & Telephone Co Inc	Great Bend, Kans	Muttergren	Sargent & Lundy	9-53	375	900		1	170	CE	18.3	4.7	29.1	DB
West Texas Utilities Co	San Angelo, Texas	Concho	Sargent & Lundy	3-53	875	900		1	300	BW	20.6	8.1	31.2	DB
	Haskell, Texas	Paint Creek	Sargent & Lundy	5-53	875	900		1	300	BW	20.6	8.1	31.2	DB
Central Illinois Electric & Gas Co	Rockford, Ill	Sabrooke	Stone & Webster Engrg Corp	1955	850	900		1	300	FW	26.8	10.8	22.4	
Central Power & Light Co	W Calallen, Texas	Lon C Hill	Sargent & Lundy	1-54	850	900		1	630	BW	27.3	12.4	30.0[1]	
	Victoria, Texas	Victoria	Sargent & Lundy	1-55	950	900		1	630	BW	27.3	12.4	30.9[1]	
Eastern Shore Public Service Co of Md	Vienna, Md	Vienna	United Engrs & Constructors	4-51	850	900		1	300	BW	23.3	10.6	18.0	DB
Kansas Power and Light Co	Lawrence, Kansas	Lawrence[4]	Black & Veatch	1-53	850	900		1	375	CE	19.2	11.6	19.5	ST
Kentucky Utilities Co	Central City, Ky	Green River	Sargent & Lundy		850	900		1	660	BW	10.5	15.0	18.9	
	W Lawrenceburg, Ky	Tyrone	Sargent & Lundy	6-53	850	900		1	660	BW	10.5	15.0	18.9	
Oklahoma Gas & Electric	Duncan, Okla	South	Sargent & Lundy	12-52	850	900		1	630	BW	42.8	13.7	24.3[1]	DB
Public Service Co of Colorado	Denver, Colo	Zuni	Ebasco Services Inc	2-54	850	900		1	675	BW	48.5	18.6	16.1	DB
Savannah Electric & Power Co	Savannah, Ga	Riverside[4]	Stone & Webster Engrg Corp	7-54	850	900		1	220	CE	....	—	28.0[1]	
Tucson Gas, Electric Light & Power Co	Tucson, Ariz	Station No. 3[4]	Sanderson & Porter	6-53	850	900		1	275	BW	....	8.1	28.7[1]	
				5-54	850	900		1	550	BW	....	12.5	28.2[1]	
Iowa-Illinois Gas & Electric Co	Moline, Ill	Moline	Sargent & Lundy	6-53	825	325		2	200	RS	20.1	5.7	15.5	DB
Central Illinois Light Co	E. Peoria, Ill	R S Wallace	Commonwealth Associates Inc	8-52	815	960		1	500	RS	39.9	26.8	14.5	DB
Atlantic City Electric Co	Ridgestown, N J	Greenwich[4]	Burns & Roe Inc	11-52	650	925		2	230	CE	27.5	—	18.0	DB
Bangor Hydro Electric Co	Veazie, Maine	E M Granam	C T Main, Inc	7-54	600	825		1	125	RS	13.8	4.3	24.9	
Iowa Public Service Co	Storm Lake, Iowa	Hawkeye	J F Pritchard Co	10-53	600	825		1	125	BW	15.4	—	26.8	
	Carroll, Iowa	Carroll	Black & Veatch	6-53	400	750							—	

An – Anthracite
AC – Allis-Chalmers Mfg Co
Ad – Admiralty
AdI – Admiralty, inhibited
AlB – Aluminum bronze
AlBr – Aluminum brass
AnAd – Antimonial admiralty
AnAdI – Inhibited antimonial admiralty
AsAd – Arsenical admiralty
AsAlB – Arsenical aluminum brass
AsCu – Arsenical copper
B – Variable-pitch blades
BW – Babcock & Wilcox Co
C – Coal, bituminous
CE – Combustion Engineering, Inc
Con – Condenser deaeration
CuNi – Copper nickel
Cy – Cyclone furnace
D – Damper
DB – Dry bottom
Du – Dual turbine and motor drive
FW – Foster Wheeler Corp
G – Natural gas
GE – General Electric Co
Hy – Hydraulic
L – Lignite
Lo – Louvers
M – Motor drive
Ma – Magnetic
Mp – Two motors
– Oil
– Pulverizec
– Phosphoric
– Plate
– Regulator
– Red brass

ennsylvania Power Co	West Pittsburgh, Pa	New Castle	Commonwealth Associates Inc	10-52	1450	1000	1000	1	690	BW
ochester Gas & Electric Corp	Rochester, N. Y	Russell	Gilbert Associates Inc	1953	1450	1000	1000	1	470	CE
uthwestern Public Service Co	Amherst, Texas	Plant "X"		1955	1450	1000	1000	1	800	CE
	Sunray, Texas	Moore County		1954	850	900		1	500	CE
	Denver City, Texas	Denver City[8]	J F Pritchard & Co	1954	850	900		1	500	CE
r lectric & Power Co	Portsmouth, Va	Portsmouth	Stone & Webster Engrg Corp	8-54	1450	1000	1000	1	750	CE
st n Power Co	Springdale, Pa	Springdale	Sanderson & Porter, G W Saathoff	1954	1450	1000	1000	1	950	BW
sconsin Power & Light Co	North Beloit, Wis	Rock River	Sargent & Lundy	11-53	1450	1000	1000	2	525	BW
mbridge Electric Light Co	Cambridge, Mass	Kendall Square	Gilbert Associates, Inc	1954	1320	910		1	300	BW
lifornia Electric Power Co	Highgrove, Calif	Highgrove	Fluor Corp	10-53	1250	950		1	425	CE
				1955	1250	950		1	425	CE
quesne Light Co	Elrama, Pa	Elrama		10-53	1300	1000	1000	1	875	BW
lumbus & Southern Ohio Electric Co	Athens, Ohio	E M Poston	Ebasco Services Inc	11-53	1250	950		1	625	CE
dianapolis Power & Light Co	nr Martinsville, Ind	White River	Gibbs & Hill Inc	12-53	1250	950		1	600	CE
nnsylvania Power & Light Co	nr Martins Creek, Pa	Martins Creek	Ebasco Services Inc	5-54	1250	950		1	1200	FW
				5-56	1250	950		1	1200	FW
blic Service Co of New Hampshire	Portsmouth, N. H	Schiller	Jackson & Moreland	9-53	1250	950		1	425	FW
				7-55	1250	950		1	425	FW
ion Electric Co of Missouri	St. Louis County, Mo	Meramec		4-54	1250	950	950	1	925	CE
ssouri Public Service Co	Pleasant Hill, Mo	Ralph Green	Burns & McDonnell Engrg Co	12-53	1050	915		1	200	BW
blic Service Co of Oklahoma	Washita, Okla	Southwestern	Sargent & Lundy	2-54	900	900		1	690	BW
mpa Electric Co	Tampa, Fla	Hookers Point[4]	Stone & Webster Engrg Corp	9-53	875	900		1	505	BW
stern Light & Telephone Co Inc	Great Bend, Kans	Mullergren	Sargent & Lundy	9-53	875	900		1	170	CE
st Texas Utilities Co	San Angelo, Texas	Concho	Sargent & Lundy	3-53	875	900		1	300	BW
	Haskell, Texas	Paint Creek	Sargent & Lundy	5-53	875	900		1	300	BW
nois Electric & Gas Co	Rockford, Ill	Sabrooke	Stone & Webster Engrg Corp	1955	850	900		1	300	FW
wer & Light Co	nr Calallen, Texas	Lon C Hill	Sargent & Lundy	1-54	850	900		1	630	BW
	Victoria, Texas	Victoria	Sargent & Lundy	1-55	850	900		1	630	BW
stern Shore Public Service Co of Md	Vienna, Md	Vienna	United Engrs & Constructors	4-51	850	900		1	300	BW
nsas Power and Light Co	Lawrence, Kansas	Lawrence[4]	Black & Veatch	1-53	850	900		1	375	CE
ntucky Utilities Co	Central City, Ky	Green River	Sargent & Lundy		850	900		1	660	BW
	nr Lawrenceburg, Ky	Tyrone	Sargent & Lundy	6-53	850	900		1	660	BW
lahoma Gas & Electric	Sulphur, Okla	South	Sargent & Lundy	12-52	850	900		1	630	BW
blic Service Co of Colorado	Denver, Colo	Zuni	Ebasco Services Inc	2-54	850	900		1	675	BW
vannah Electric & Power Co	Savannah, Ga	Riverside[4]	Stone & Webster Engrg Corp	7-54	850	900		1	220	CE
cson Gas, Electric Light & Power Co	Tucson, Ariz	Station No. 3[4]	Sanderson & Porter	6-53	850	900		1	275	BW
				5-54	850	900		1	550	BW
wa-Illinois Gas & Electric Co	Moline, Ill	Moline	Sargent & Lundy	6-53	825	825		2	200	RS
ntral Illinois Light Co	E. Peoria, Ill	R S Wallace	Commonwealth Associates Inc	9-52	815	900		1	600	RS
lantic City Electric Co	Gibbstown, N. J	Greenwich[4]	Burns & Roe Inc	11-52	650	825		2	230	CE
ngor Hydro Electric Co	Veazie, Maine	E M Granam	C T Main, Inc	7-54	600	825		1	125	RS
wa Public Service Co	Storm Lake, Iowa	Hawkeye	J F Pritchard Co	10-53	600	825		1	125	BW
	Carroll, Iowa	Carroll	Black & Veatch	6-53	400	750				

– Anthracite
– Allis-Chalmers Mfg Co
– mirality
– mirality, inhibited
B – luminum bronze
B – luminum brass

AnAd – Antimonial admiralty
AnAdI – Inhibited antimonial admiralty
AsAd – Arsenical admiralty
AsAlB – Arsenical aluminum brass
AsCu – Arsenical copper
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Con – Condenser deaeration
CuNi – Copper nickel
Cy – Cyclone furnace

D – Damper
DB – Dry bottom
Du – Dual turbine and motor drive
FW – Foster Wheeler Corp
G – Natural gas
GE – General Electric Co

Hy
L
Lo
M
Ma
Mo

Steam Central-Station Installations

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: Drive	F-D FANS: Air flow control	I-D FANS: Drive	I-D FANS: Gas flow control	Firing	FUEL: Type	FUEL: Heating value, 1000 Btu per lb	FUEL: Ash-softening temperature, F	FEED PUMPS: Drive	FEED PUMPS: Flow control	TURBINES: Number	TURBINES: Capacity, 1000 kw	TURBINES: Manufacturer	TURBINES: Backpressure, psia	TURBINES: No. bleed points	Full-load generator pressure, psia	CONDENSERS: Surface, 1000 sq ft	CONDENSERS: No. water passes	CONDENSERS: Tube material	Total boiler capacity incl new units, 1000 lb	Total generator capacity incl new units, 1000 kw
18.5	DB	18.9	169.5	Re	M	S,V	M		F	C,G	12.5	2400	2 M	R	1	61.5	WE	0.5	5	95	45.0	1	A I B	3643	402
15.1	DB	37.9	42.9	Re	M	D,V	M	D,V	P	C	13.2	2100	3 M	R	1	100[7]	GE	2.0	5	Con	75.0	2	Cu Ni	1000	100
15.7	DB	16.3	274.0	Tu	M	V	M	V	P	C	11.0	2100	3 M	R	1	105	GE	0.5	5		55.0	1	Ac	2230	276
17.6	DB	29.1	120.0	Re	M	D	M	D	O	C	18.3		3 M	R	1	135	GE	1.25	6	Con	80.0	2	Al Br		
18.1	DB	33.5	89.4	Re	M	D	M	D	O	C	18.3		3 M	R	1	75	WE	1.25	5	Con	60.0	2	Al Br		160
14.7	DB	35.2	159.8	Re	M	Hy	M	Hy	P	C	11.3	2050	3 M	R	1	90	WE	0.75	5	90	80.0	2	As Ad I	820	90
14.1	DB	25.5	190.0	Re	M	V	M	D	P	C	11.0	2200	3 M	R	1	135	GE	0.75	5	94	55.0	2	As Ad	2400	285
19.7[1]	DB	7.2	140.5	Re	M	D	[1]	[1]	G,O	S,O	1100[6]		2 M	Hy	1	109[7]	WE	0.75	5	88	70.0	2	Ad	1675	200
18.0	DB	14.8	143.5	Tu	M	D,Hy	M	D,Hy	P	C	12.0	2200	2 M	Hy	1	85	WE	0.75	5	Con	47.5	2	An Ad	1540	175
20.2	DB	5.2	128.0	Re	M	V	M	V	P	C	12.8	2100	3 M	R,Hy	1	50	GE	1.25	5	Con	32.5	2	Ad	1370	140
22.5[1]	DB	23.0	117.2	Re	M	D,V	[1]	D[1]	G,O	G,O	1000[6]		3 M	Hy	1	80	GE	1.75	6	90	75.0	2	As Ac	2300	200
29.0[1]	DB	0	75.5	Re	M	D,V	[1]	D[1]	G,O	G,O	1000[6]		2 M	Hy	1	40	GE	1.75	5	25	42.5	2	As Ac	880	66
25.0[1]	DB	0	75.5	Re	M	D,V	[1]	D[1]	G,O	G,O	1000[6]		2 M	Hy	1	40	WE	1.75	5	25	42.5	2	As Ac	1120	77
26.0	DB	13.5	226.4	Re	M	D,V	M	D	P	C,O	13.0	2300	3 M	Hy	1	100[7]	WE	0.75	5	75	65.0	2	Al Br	1500	200
15.3	DB	17.1	274.7	Tu	M	V	M	V	P	C	10.6	2350	3 M	R	1	100	WE	0.75	7		65.0	2	Ad I	4450	452
39.4[1]		14.3	193.1	Tu	M	V	M[1]	D[1]	Cy	C	12.0	2000	2 M	Hy	2	60	AC	0.25	5	45	50.0	2	An Ad	1050	120
20.3	DB	4.2	66.6	Tu	Mc	V	Mc	V	O,G	O,G			2 M	R										400	35
22.8	DB	13.9	63.4	Re	M	V	M	V	O,G	O,G	1100[6]		2 M	R	1	40[7]	GE	1.0	5	60	35.0	2	As Cu	1065	100
22.8	DB	13.9	63.4	Re	M	V	M	V	O,G	O,G	1100[6]		2 M	R	1	40[7]	GE	1.0	5	60	35.0	2	As Cu	1490	140
14.9	DB	9.1	108.5	Re Tu					P	C					1	80	WE	0.75							
17.5	DB	33.9	147.7	Tu	M	V	M	V	P	C	11.0	2545	3 M	R	1	60[7]	WE	0.75	5	63.4	55.0	2	As Cu / Cu Ni	2100	200
18.5	DB	22.5	69.0	Re	Mc	V	Mc	V	P	C	11.0	1950	3 M		1	60[7]	GE	0.75	5	60	40	2	As Ac	2400	240
14.2	DB	47.5	238.0	Re	M	V	M	V	P	C	13.7	2000	3 M	R	1	132	GE	2.0	5	79	60	2	Ad[9]	1200	132
14.2	DB	47.5	238.0	Re	M	V	M	V	P	C	13.7	2000	3 M	R	1	132	GE	2.0	5	79	60	2	Ad[9]	2400	265
20.6	DB	9.5	37.3	Re,Pl	M	V	M	Ma	P	C,O	16.7		2 M		1	40[7]	WE	0.75	5	75	27.5	2	Al Br	450	40
20.6	DB	9.5	42.5	Re,Pl	M	V	M	D,V	O	O	18.7		2 M		1	40[7]	WE	0.75	5		27.5	2	Al Br	900	80
12.8	DB	35.6	268.6	Tu	M	V	M	V	P	C	10.0	2100	3 M	R	1	110	WE	0.75	7	65	90.0	2	Ad	1850	220
18.4	DS		52.0	Tu	M	V	M	D	P,G	C,G	12.5	2000	1 M, 1 T	R	1	20[7]	GE	0.75	4		23.0	2	Ad	200	20
24.3[1]	DB		246.5	Tu	M	D	[1]	[1]	G,O	G,O	1025[6]		1 M	R	1	80[7]	WE	0.75	4	89.4	60.0	2	Cu Ni	1400	160
31.3		0		Re	M	V	M	V	C	O	18.0		3 M	R	1	40[7]	GE	0.75	5	56.9	42.5	2	Cu Ni	1551	130
29.1	DB	0	38.5	Re	M	V	M	V	G,O	G,O	1004[6]		2 M		1	15	GE	0.75	4		15.0	2	Ad I	170	15
31.2[1]	DB	0	53.3	Tu	M	B	[1]	[1]	G,O	G,O	1004[6]		2 M		1	30	AC	0.75	4		30.0	2	As Ac	630	55
31.2	DB	0	53.3	Tu	M	B	[1]	[1]	G,O	G,O	1004[6]		2 M		1	30	GE	0.75	4		30.0	2	As Ad	300	30
22.4		19.4	32.9	Tu	M	D,V	M	S,D,V	SS(546[1]	C,G	10.6	1950	2 M	R	1	30[7]	AC	0.75	4	90	25.0	2	Ad	800	80
30.0[1]		0	155.3	Tu	M	V	[1]	[1]	G,O	G,O	1000[6]		2 M	F	1	60[7]	GE	0.75	4	115	60.0	2	As Ad	630	66
30.0[1]		0	155.3	Tu	M	V	[1]	[1]	G,O	G,O	1070[6]		2 M	R	1	60[7]	WE	0.75	4	115	60.0	2	As Ad	932	99
18.8	DB		65.2	Re	Mc	D,V	Mc	D	P	C	13.0	2500	2 M	R	1	30[7]	WE	0.75	5	Con	27.5	2	Ac	995	87
19.5	ST		65.6	Pl	M	D,Ma	M	D,Ma	P	An,O,G	11.5		1 M, 1 T	R	1	36	WE	0.75	5		35.0	2	Ac	475	47
14.9		8.4	182.6	Tu	M	V	M	S,Hy	P	C	11.4	1950	2 M	R	1	60[7]	WE	0.75	4	65	55.0	2	Ad I	1305	120
14.9		8.4	182.6	Tu	M	V	M	S,Hy	P	C	11.4	1950	2 M	R	1	60[7]	WE	0.75	4	65	55.0	2	Ad I	1260	110
24.3[1]	DB	0	123.4	Tu	M	D	[1]	[1]	G,O	G,O	1100[6]		2 M		1	70	GE	0.75	4		60.0	2	P Ac	630	70
16.1	DS	0	196.8	Tu	M	V	M	V	P	L,G	9.3	2090	3 M	R	1	60[7]	WE	0.75	5	22	45.0	2	Ad I	1225	95
29.0[1]		0		Re	M	V	[1]	[1]	O	O	18.4		2 M	R	1	20[7]	WE	0.75	4	52	16.0	2	Ad	960	75
29.7[1]		0	53.3	Tu	Mc	V	[1]	[1]	G,O	G,O	1073[6]		2 M	R	1	20	WE	1.25	3	Con	20.0	2	Ac	575	44
29.2[1]		0	72.1	Tu	Mc	V	[1]	[1]	G,O	G,O	1073[6]		2 M	R	1	40	WE	1.25	3	Con	45.0	2	Ad	1125	84
16.5	DB	0	47.4	P	M	D,Hy	M	D,Hy	G	G	1030[6]		2 M	R	1	20[7]	WE	0.5	4	50	22.5	2	Ac	800	80
14.5	DB	10.5	127.5		M	Hy	M	Hy	P	C	10.0	1900	2 M	R	1	60[7]	WE	0.75	4	15	45.0	2	An Ad	2440	215
18.0	DB	0	77.1	Tu	T	S	T	S	P	C,O	13.0	2000	1 M, 2 T	R	1	11.5	GE	190	0					460	11
24.9		0	20.5	Re	M	V	M	D	C	O	18.4		2 M	R	1	11.5[7]	GE	0.75	4		11.5	2	As Ad	125	23
25.8		4.4	8.0	Tu	M	V	M	Ma	SS(287[1]	C	9.9	1900	1 M, 1 T		1	11.5[7]	GE	1.0	4	45	11.0	2	Ad	225	19
—	—	—	—	—	—	—	—	—	—	—	—	—	1 M		1	5	WE	0.75	3	35	6.5			120	10

[illegible]
Pulverized-fuel fired
Pressurized admiralty
Plate
Regulator
Red brass

Re – Regenerative
RS – Riley Stoker Corp
S – Speed control
Sup – Superlov
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V – Vane control
WE – Westinghouse Electric Corp
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9 – Type B
10 – 10-mw auxiliary generator on main shaft
11 – Second reheat at 1000 F

1953 Design Survey of Typical N

Compiled by B G A Skrotzki, Associate Editor

Company	Location	Plant name	Consulting engineers	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, Boiler & W	BOILERS: Surface, [illegible]
The Ohio Power Co	nr Zanesville, Ohio	Philo	Am Gas & Elec Service Corp	...	4500	1150	1050[11]	1	675	BW	...	—
Public Service Electric and Gas Co	Burlington, N. J	Burlington		1954	2350	1190	1050	1	1225	BW	19.8	88.6
Consumers Power Co	Essexville, Mich	John C Weadock	Commonwealth Associates Inc	4-55	2300	1050	1000	1	1050	CE	43.6	122.5
Ohio Edison Co	Shadyside, Ohio	R E Burger	Commonwealth Associates Inc	9-54	2300	1050	1000	1	1050	BW	18.9	70.7
Jersey Central Power & Light Co	Savreville, N. J	Raritan River	Burns and Roe Inc	12-54	2000	1050	1000	1	900	BW	20.4	43.4
Appalachian Electric Power Co	Glasgow W Va	Kanawha River	Am Gas & Elec Service Corp	4-53	2000	1050	1050	1	1335	BW	39.7	91.6
				10-53	2000	1050	1050	1	1335	BW	39.7	91.6
Indiana & Michigan Electric Co	Lawrenceburg, Ind	Tanners Creek	Am Gas & Elec Service Corp	9-54	2000	1050	1050	1	1335	BW	39.7	91.3
Indiana-Kentucky Electric Corp	Madison, Ind	Clifty Creek	Am Gas & Elec Service Corp	1-55[5]	2000	1050	1050	6	1340	BW	38.3	91.8
The Ohio Power Co	Relief, Ohio	Muskingum River[4]	Am Gas & Elec Service Corp	11-53	2000	1050	1050	1	1335	BW	37.4	91.4
				1-54	2000	1050	1050	1	1335	BW	37.4	91.4
Ohio Valley Electric Corp	Cheshire, Ohio	Kyger Creek	Am Gas & Elec Service Corp	1955	2000	1050	1050	5	1340	BW	38.3	91.8
Central Hudson Gas & Electric Corp	Roseton, N. Y	Danskammer Point	Burns and Roe Inc	8-54	1840	1000	1000	1	500	CE	21.7	28.1
Alabama Power Co	Barry, Ala	Barry	Southern Services Inc	12-53	1800	1000	1000	1	900	CE	44.7	80.9
				4-54	1800	1000	1000	1	900	CE	44.7	80.9
Cleveland Electric Illuminating Co	Eastlake, Ohio	Eastlake		9-53	1800	1050	1000	3	875	CE	44.4	70.8
Rockland Light and Power Co	Tomkins Cove, N. Y	Hudson	Burns and Roe Inc	11-54	1800	1050	1000	1	550	CE	21.7	45.8
Cons Gas, Elec Lt & Pwr Co of Baltimore	Anne Arundel County, Md	Herbert A Wagner		1955	1800	1000	1000	1	950	BW	21.0	47.2
Dallas Power & Light Co	Dallas, Texas	Mountain Creek	Ebasco Services Inc	1-56	1800	1000	1000	1	1200	RS	...	—
		Parkdale	Ebasco Services Inc	1-55	1450	1000	...	1	1050	BW	...	—
		Parkdale	Ebasco Services Inc	5-53	1250	950	...	1	775	BW	10.8	20.2
		Dallas	Ebasco Services Inc	3-54	1250	950	...	1	650	CE	11.5	16.8
Duke Power Co	Mt. Holly, N. C	Riverbend		1954	1800	1000	1000	2	1000	CE	53.6	72.9
Electric Energy Inc	Joppa, Ill	Joppa	Ebasco Services Inc	...	1800	1050	1000	1	1200	CE	52.3	100.9
				...	1800	1050	1000	1	1200	CE	52.3	100.9
Georgia Power Co	Krannert, Ga	Hammond	Southern Services Inc	11-53	1800	1000	1000	1	725	BW	17.5	—
				2-54	1800	1000	1000	1	725	BW	17.5	—
				9-54	1800	1000	1000	1	725	BW	17.5	—
Houston Lighting & Power Co	Pasadena, Texas	Deepwater	Ebasco Services Inc	1-55	1800	1000	1000	1	1200	RS	44.7	91.4
	Undetermined	Undetermined	Ebasco Services Inc	1-56	1800	1000	1000	1	1200	RS	44.7	91.4
New York State Electric & Gas Corp	Ludlowville, N. Y	Milliken	Gilbert Associates, Inc	7-55	1800	1000	1000	1	900	CE	44.7	83.4
Pacific Gas & Electric Co	Pittsburg, Calif	Pittsburg	Becntel Corp	1954	1800	1000	1000	4	1080	BW	20.1	80.8
Pennsylvania Electric Co	Shawville, Pa	Shawville[4]	Gilbert Associates Inc	1954	1800	1050	1000	2	394	BW	5.4	—
Potomac Electric Power Co	Alexandria, Va	Potomac River	Stone & Webster Engrg Corp	5-54	1800	1050	1000	1	725	CE	36.1	72.8
				5-55	1800	1050	1000	1	725	CE	36.1	72.8
South Carolina Generating Co	Beech Island, S. C	Urquhart	Gilbert Associates Inc	7-55	1800	1000	1000	1	700	CE	37.4	—
Southern California Edison Co	Etiwanda, Calif	Etiwanda	Stone & Webster Engrg Corp	7-53	1800	1000	1000	2	920	CE	33.7	59.1
	Redondo Beach, Calif	Redondo Beach	Stone & Webster Engrg Corp	10-54	1800	1000	1000	1	1140	BW	20.1	90.0
	Redondo Beach, Calif	Redondo	Stone & Webster Engrg Corp	10-55	1800	1000	1000	1	1140	BW	20.1	80.0
Texas Electric Service Co	Fort Worth, Texas	Eagle Mountain	Ebasco Services Inc	3-56	1800	1000	1000	1	1250	RS	44.7	100.0
Long Island Lighting Co	Island Park, N. Y	E F Barrett	Ebasco Services Inc	9-56	1800	1000	1000	1	1150	CE	53.8	—
	Glenwood Landing, N. Y	Glenwood No 3	Ebasco Services Inc	9-54	1450	1000	1000	1	750	CE	36.7	47.5
	Far Rockaway, N. Y	Far Rockaway No 2	Ebasco Services Inc	10-53	1450	1000	1000	1	750	CE	36.7	47.5
Cincinnati Gas & Electric Co	New Richmond, Ohio	Walter C Beckjord	Sargent & Lundy	12-54	1525	1000	1000	1	360	BW	16.6	52.3
Public Service Co of Indiana	West Terre Haute, Ind	Wabash	Sargent & Lundy	5-54	1500	1000	1000	1	700	FW	35.7	11.6
				8-54	1500	1000	1000	1	700	FW	35.7	11.6
Illinois Power Co	Hennepin, Ill	Hennepin[4]	Sargent & Lundy	6-53	1450	1000	1000	1	525	CE	29.1	50.4
	nr Danville, Ill	Vermilion	Sargent & Lundy	12-54	1450	1000	1000	1	525	CE	32.8	31.8
Arizona Public Service Co	nr Red Rock, Ariz	Saguaro	Ebasco Services Inc	1-54	1450	1000		1	900	CE	29.4	26.7
				5-55	1450	1000		1	900	CE	29.4	26.7
Northern States Power Co	Nicollet, Minn	Black Dog		10-55	1450	1000	1000	1	775	BW	...	—

An – Anthracite
AC – Allis-Chalmers Mfg Co
Ad – Admiralty
AdI – Admiralty, inhibited
AlB – Aluminum bronze
AlBr – Aluminum brass
AnAd – Antimonial admiralty
AnAdI – Inhibited antimonial admiralty
AsAd – Arsenical admiralty
AsAlB – Arsenical aluminum brass
AsCu – Arsenical copper
B – Variable-pitch blades
BW – Babcock & Wilcox Co
C – Coal, bituminous
CE – Combustion Engineering, Inc
Con – Condenser deaeration
CuNi – Copper nickel
Cy – Cyclone furnace
D – Damper
DB – Dry bottom
Du – Dual turbine and motor drive
FW – Foster Wheeler Corp
G – Natural gas
GE – General Electric Co
Hy – Hydraulic coupling
L – Lignite
Lo – Louvers
M – Motor drive
Ma – Magnetic coupling
Mp – Two motors per

Team Central-Station Installations

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: Drive	F-D FANS: Air flow control	I-D FANS: Drive	I-D FANS: Gas-flow control	Firing	FUEL: Type	FUEL: Heating value 1000 Btu per lb	FUEL: Ash-softening temperature, F	FEED PUMPS: Drive	FEED PUMPS: Flow control	TURBINES: Number	TURBINES: Capacity, 1000 kw	TURBINES: Manufacturer	TURBINES: Backpressure, psia	TURBINES: No. bleed points	Full-load generator pressure, psia	CONDENSERS: Surface, 1000 sq ft	CONDENSERS: No. water passes	CONDENSERS: Tube material	Total boiler capacity incl new units, 1000 lb	Total generator capacity incl new units, 1000 kw
	ST			Tu					Cv	C					1	125	GE	0.75	7	200		2			495
24.1	ST	25.6	444.[illegible]	Re	M	Hy	M	D	P	C 0,G	13.0	2100	3 M	Hy	1	185	WE	0.75	8	Con	80	1	As Ad	4025	475
20.7	DB	30.4	317.5	Tu	M	V	M	Lo	P	C	11.0	2100	3 M	R	1	135	WE	1.25	8	Con	70	1	Ac	4150	425
21.3	DB	18.1	427.0	Tu	M	V	M	Lo	P	C	11.0	2100	3 M	R	1	135	WE	1.25	8	Con	75	2	An Ad	4500	460
42.8[1]	ST	C	351.2	Tu	M	D	[1]	[1]	Cv	C,0,G	13.0	2300	3 M	Hy	1	100	GE	0.5	7	82.9	80	1	Ad	1950	225
13.4[1]	DB	16.7	246.6	Re	M	V	M[1]	V[1]	P	C	12.0	2800	3 M	R	1	200[3]	GE	0.75	7	62	90.0	1	As Ac	2670	400
13.4[1]	DB	16.7	246.6	Re	M	V	M[1]	V[1]	P	C	12.0	2800	3 M	R	1	200[3]	GE	0.75	7	62	90.0	1	As Ac		
13.3[1]	DB	16.7	246.6	Re	M	V	M[1]	V[1]	P	C	11.0	2300	3 M	R	1	200[3]	GE	0.75	7	62	90.0	1	An Ac	3225	500
18.1[1]	DB	13.2	245.6	Re			[1]	[1]	P	C					6	200[3]	GE	0.75						8040	1200
18.2[1]	ST	13.3	246.6	Re	M	V	M[1]	V[1]	P	C	10.5	2000	3 M	R	1	200[3]	GE	0.75	7	62	90.0	1	As Ac	2670	400
18.2[1]	ST	13.3	246.6	Re	M	V	M[1]	V[1]	P	C	10.5	2000	3 M	R	1	200[3]	GE	0.75	7	62	90.0	1	As Ac		
18.1[1]	DB	13.2	246.6	Re			[1]	[1]	P	C					4	200[3]	WE	0.75						4700	1000
															1	200[3]	GE	0.75							
22.5	DB	25.5	82.5	Tu	M	D	M	Hv	P	C,0	13.3	2000	2 M	Hy	1	60[7]	GE	0.5	6	82.7	46.6	1	Ad	1000	120
13.3	ST	25.6	264.2	Re	M	Hy	M	Hy	P	C	11.6	2550	3 M	Hy	1	125	GE	1.75	5	80	87.0	2	As Ad	900	125
13.3	ST	25.6	264.2	Re	M	Hy	M	Hy	P	C	11.6	2550	3 M	Hy	1	125	GE	1.75	5	80	87.0	2	As Ad	1800	250
25.3	DB	22.5	198.2	Re	M	V	M	V	P	C	11.4	2200	9 M,T	R	3	100	GE	0.5	6	45	60.0	1	RB	2302	375
22.5	DB	20.0	83.5	Tu	M	V	M	S, Hv	P	C,0	13.0	2550	2 M	S, Hy	1	60[7]	GE	0.5	6	81	46.6	1	Ad	1000	110
18.8	DB	12.4	180.2	Re	M	V	M	Hy	P	C	13.4	1900	2 M	Hy	1	125	WE	0.75	5	73	95.0	2		950	125
[illegible][1]				Re	M	V	[1]	[1]	G,O	G,O	1060[6]		3 M	R	1	15[illegible]	WE		6	Con	110	2	As Cu	2900	330
[illegible][1]				Tu	M	V	[1]	[1]	G O	G,O	1060[6]		3 M	R	1	105	WE	1.75	4	Con	75.0	2	As Cu	1825	202
21.8[1]		21.0	219.9	Tu	M	V	[1]	[1]	G O	G,O	1060[6]		3 M	R	1	82	GE	1.25	4	Con	60.0	2	As Cu	775	87
27.1		15.7	76.0	Tu	M	V	M	V	G,O	G,O	1060[6]		2 M	R	1	71	GE	1.25	4	56	55,0	2	As Cu	2390	230
13.8	DB	17.9	233.8	Re	M	V	M	Hv	P	C	12.8	2280	5 M	Hy	2	133	GE	0.75	6	105	85.0	2	Ad 1	5770	631
14.5	DB	25.8	220.4	Re	M	D	M	D	P	C	10.7	2350	3 M	R	1	125	GE	0.75	6		90.0	2	Ac	4800	500
14.5	DB	25.8	220.4	Re	M	D	M	D	P	C	10.7	2350	3 M	R	1	125	GE	0.75	6		90.0	2	Ac		
20.8	ST	14.8	189.6	Re	M	Hy	M	Hy	P	C	12.0	2500	3 M	Hy	1	100	WE	1.75	5	80	74.0	2	As Ad	725	100
20.8	ST	14.8	189.6	Re	M	Hy	M	Hy	P	C	12.0	2500	3 M	Hy	1	100	WE	1.75	5	80	74.0	2	As Ac	1450	200
20.8	ST	14.8	189.6	Re	M	Hv	M	Hy	P	C	12.0	2500	3 M	Hv	1	100	WE	1.75	5	80	74.0	2	As Ac	2175	300
20.4[1]		11.7	122.8	Re	M	V	[1]	[1]	G,O	G,O	1060[6]		3 M	R	1	125	GE	1.75	6	126.5	100.0	2	Al Br	3000	304
20.4[1]		11.7	122.8	Re	M	V	[1]	[1]	G,O	G,O	1060[6]		3 M	R	1	125	GE	1.75	6	126.5				1200	156
12.9	DB[2]	16.1	236.0	Re	M	V	M	V	P	C,0	13.6	2150	3 M	R,Hy	1	108	WE	0.5	7	115	70.0	1	As Ac	900	108
18.9		0	197.6	Re	M	D,V	M	D	O,G	O,G	18.5		10 M	R	4	156	GE	0.75	7	115	65.0	1	Al Br	4320	625
24.0	DE	7.8	256.7	Tu	M	V	M	V	F	C	13.0	2100	6 M	R	2	125	GE	1.75	7	85.6	82.6	2	Sus	1788	250
15.3	DB	24.6	248.0	Tu	M	D	M	Ma	P	C	13.0	2000	3 M	Hy	1	90	GE	0.5	7	80.5	70.0	2	Ac	3050	340
15.3	DB	24.6	248.0	Tu	M	D	M	Ma	F	C	13.0	2000	3 M	Hy	1	90	GE	0.5	7	80.5	70.0	2	Ac		
16.0	DB	16.7	97.1	Re	M	V	Mo	S,V	F	C	13.7	2000	2 M		1	100	GE	0.75	7	35	65.0	2	Ac	1720	250
24.8		22.7	183.2	Re	M	D,V	M	D	O,G	O,G	18.5		6 M	R	2	100	GE	1.0	6	18.5	80.0	2	As Cu	1840	200
18.5		0	335.0	Re	M	D V	M	D	O,G	O,G	18.5		3 M	R	1	125[10]	GE	0.75	7	22.6	90.0	2	Al Br	3940	389
18.5		0	339.0	Re	M	D V	M	D	C G	O G	18.5		3 M	R	1	125[10]	WE	0.75	7	23.5	90.0	2	Al Br	5080	514
19.4[1]	DB	13.3	122.8	Re	M	V	[1]	[1]	G O	G,O	1050[6]		3 M	R	1	156	GE	1.25	6	Con	100.0	2	As Ac	2350	260
13.6	DB	20.2	114.5	Re	M	D	M	D	P,O	C O	12.9	2000	3 M	R	1	160	GE	1.25	6	Con	70.0	1	Al Br	1150	160
14.3	DB	21.9	79.8	Re	M	V	M	D	P O	C,O	12.9	2000	3 M	R	1	90[7]	GE	1.25	5	Con	60.0	2	Al Br	3500	350
14.3	DB	21.9	79.8	Re	M	V	M	D	P,O	C,O	12.9	2000	3 M	R	1	90[7]	GE	1.25	5	Con	68.4	1	Al Br	1245	124
15.4	DB	18.9	135.4	Re	M	D V	M	D, Ma	P	C	12.0	2350	3 M	Hy	1	125	GE	0.75	6		76.0	2	As Cu	2272	325
15.2	DB	32.1	222.0	Re	M	V	M	Hy	P	C	11.2	1925	2 M	Hv	1	90	GE	0.75	5		70.0	2	As Ac	2800	360
15.2	DB	32.1	222.0	Re	M	V	M	Hy	P	C	11.2	1925	2 M	Hv	1	90	GE	0.75	5		70.0	2	As Ac		
15.0		9.4	172.5	Tu	M	D Hv	M	D, Hv	F	C	10.5	1900	1 M	T Hy	1	60	GE	0.75	5	80	50.0	2	As Cu	525	60
14.3		25.8	172.5	Tu	M	D Hv	M	D Hv	P	C	11.5	2200	1 M	T Hy	1	60	GE	0.75	5	80	55.0	2	Ad 1	525	60
20.3	DE	42.5	72.6	Re	M	D V	M	D	G,O	G O	1080[6]			R	1	90[7]	GE	1.25	5	Con	75.0	2	As Cu	900	90
20.3	DE	43.5	72.6	Re	M	D V	M	D	G,O	G,O	1080[6]		3 M	R	1	90[7]	GE	1.25	5	Con	75.0	2	As Cu	1800	180
21.5	DB	10.9	143.0	Re	M	Ma	M	Ma	P G	C G	10.4	1990	3 M	R	1	100	AC	0.75	5		65.0		Ac	2200	260

- Oil
- Pulverized-fuel fired
- Phosphorized admiralty
- Plate
- Regulator
- Red brass

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Sup – Superloy
SS – Spreader stoker
ST – Slag tap

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3 – Hp 3600 rpm, lp 1800 rpm
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6 – Btu per cu ft
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9 – Type B
10 – 10-mw auxiliary generator on main shaft
11 – Second reheat at 1000 F

1953 Design Survey: Typical Municip[illegible]ede

Compiled by B G A Skrotzki, Associate Editor

Company	Location	Plant name	Consulting engineers	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: Boiler & WW	BOILERS: Surface: Superheater	BOILERS: Surface: Economizer	Heat release, 1000 Btu per cu ft per hr	Furnace bottom
Tennessee Valley Authority	Gallatin, Tenn	Gallatin		11-55	2000	1050	1050	1[1]	1650	CE	82.2	—		—	DB
				1-56	2000	1050	1050	1	1650	CE	82.2	—		—	DB
	Pride, Ala	Colbert[2]		10-54	1800	1050	1050	1	1280	BW	27.7			—	DB
				1954	1800	1050	1050	1	1280	BW	27.7			—	DB
				1955	1800	1050	1050	1	1280	BW	27.7			—	DB
				5-55	1800	1050	1050	1	1280	BW	27.7			—	DB
	Harriman, Tenn	Kingston[3]		53-54	1800	1000	1000	4	1020	CE	43.5			16.5	DB
				3-54	1800	1050	1050	1	1280	CE	69.4			16.1	DB
				1954	1800	1050	1050	1	1280	CE	69.4			16.1	DB
				1954	1800	1050	1050	1	1280	CE	69.4			16.1	DB
				2-55	1800	1050	1050	1	1280	CE	69.4			16.1	DB
	Rogersville, Tenn	John Sevier		6-55	1800	1050	1050	1[4]	1280	CE	69.4			16.1	DB
				7-56	1800	1050	1050	1	1280	CE	69.4			16.1	DB
	Paducah, Ky	Shawnee		4-53	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1953	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1953	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1953	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1954	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1954	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1954	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1954	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				1955	1800	1000	1000	1	1000	BW	21.0			16.6	DB
				4-55	1800	1000	1000	1	1000	BW	21.0			16.6	DB
City of Los Angeles	Sun Valley, Calif	Valley	A G Christie	11-54	1800	1000	1000	1	1200	RS	21.2			16.4	DB
Omaha Public Power District	Omaha, Nebr	North Omaha[7]		4-54	1450	1000	1000	1	575	CE	28.9			16.9	DB
New York City Transit Authority	New York, N. Y.	74th Street	J G White Engrg Corp	4-54	1250	950		2	517	CE	25.2			21.1	DB
City of Jacksonville	Jacksonville, Fla	Talleyrand	Reynolds, Smith & Hills	1-55	1250	950		2	450	BW	5.3	—		20.5	
		Southside	Reynolds, Smith & Hills	1-55	1250	950		1	450	BW	5.3	—		20.5	
Bd of Water and Elec Lt Commissioners	Lansing, Mich	Moores Park[7]	Burns & Roe Inc	5-54	1250	950		1	380	BW	8.0			22.3[5]	DB
Pasadena Municipal Light & Power Dept	Pasadena, Calif	Broadway	O H Hedrich	7-54	1250	950		1	425	CE	22.5			16.7	DB
City Public Service Board	San Antonio, Texas	Leon Creek[7]	Gibbs & Hill	6-53	1250	950		1	650	BW	8.3			20.5	DB
Plains Elec Gen & Trans Coop Inc	Algodones, N. M	Algodones	Laramore & Douglass Inc	12-54	350	910		2	160	So	14.8			20.5	DB
So Carolina Pub Serv Authority	Moncks Corner, S. C		Ford, Bacon & Davis Inc	7-53	900	900		2	460	RS	—			17.8	
Central Electric Power Co-op	Chamois, Mo	Chamois	Kuljian Corp	4-53	900	900		1	160	RS	20.3			17.9	DB
Dairyland Power Cooperative	Cassville, Wis	E J Stoneman	Vern E Alden Co	10-53	900	900		1	260	RS	23.2			21.7	DB
Bd. of Water, Elec, Gas & Pow Comm	Austin, Minn	Municipal	J V Edeskuty	2-54	850	900					—	—		—	
City of Austin	Austin, Texas	Plant 2	Burns & McDonnell Engrg Co	12-54	850	900		3	225	CE	19.4			17.4	DB
Dept of Public Utilities	Colorado Springs, Colo	Geo Birdsall	Lutz & May	8-53	850	900		2	160	Sp	14.9			21.8	
Hydro-Electric Power Comm of Ontario	Windsor, Ont	J Clark Keith	H G Acres & Co	11-51	850	900		4	650	BWG	9.8			20.0	DB
Light & Water Dept	Lakeland, Fla	Lake Parker	Chas Larsen	12-54	850	900		1	200	BW	15.0			21.9	DB
Owensboro Municipal Utilities	Owensboro, Ky		Black & Veatch	1-54	850	900		1	360	RS	35.3			16.2	
Western Farmers Electric Cooperative Inc	Anadarko, Okla	Anadarko[7]	Laramore & Douglass Inc	3-53	850	900		2	145	So	14.3			17.3	DB
City of Virginia	Virginia, Minn	Municipal	Pfeifer & Schultz	1-54	700	825		1	105	Wi	11.5	—		17.7	DB
City of Hibbing	Hibbing, Minn	Municipal	Pfeifer & Schultz	1-54	675	750		2	145	Wi	16.0	—		17.7	DB
City of Yazoo City	Yazoo City, Miss		Burns & McDonnell Engrg Co	8-53	650	930		1	13	RS	13.7	—		20.9	
Lake Superior District Power Co	Ashland, Wis	Bay Front	Sargent & Lundy	10-52	650	900		1	200	BW	18.4			17.5	
Alabama Electric Coop Inc	Gantt, Ala	Gantt	Burns & McDonnell Engrg Co	12-53	600	825		2	90	RS	10.5			20.6	
Brazos River Trans Elec Coop Inc	Belton, Texas	W R Poague	Laramore & Douglass Inc	1-52	600	825		1	130	So	17.1			20.5	DB
City of Bryan	Bryan, Texas	Bryan		3-52	600	825		1	65	RS	8.8			20.2	
Water, Gas & Electric Depts	Danville, Va	Brantly	C T Main Inc	11-52	600	825		1	125	CE	16.3	—		17.5	DB
				5-53	600	825		1	125	CE	16.3	—		17.5	DB
City of Grand Island	Grand Island, Neb		Lutz & May	2-53	60-	825					—	—		—	
City of Holland	Holland, Mich	James D Young	Carroll, Becntel & Langtry	6-53	600	825		1	125	RS				20.2	
City of Dover	Dover, Del		Albert C Wood Assoc	10-53	475			1	30	UI	9.3	—		21.6	DB
City of Columbia	Columbia, Mo		Lutz & May	4-53	450	750		1	120	So	11.5	—		17.7	
Light & Power Dept	Ft Collins, Colo			1951	450	750		1	75	BW	9.2	—		17.7	DB
City of Medicine Hat	Medicine Hat, Alta	Municipal	Montreal Engineering	11-53	450	750		2	175	FW	18.4			20.4	
City of Pratt Electric Dept	Pratt, Kans		Fred D Dieni	11-52	450	725		1	55	So	1.9			17.3	
Public Utilities Commission	Hibbing, Minn	Municipal	Pfeifer & Schultz	4-53	425	750		2	145	Wi	16.0			21.1	DB
Municipal Power & Light	Pella, Iowa	Pella	Brown Engrs	1-52	415	750		1	30	WI	1.9			20.4	
Hydro Electric System	Winnipeg, Man	Arlow Street		1-53	415	750		1	165	BWG	21.0			21.5	DB
				10-53	415	750		1	280	BWG	36.9			17.1	DB
Municipal Light & Water Utility	Richland Center, Wis		Carroll, Becntel & Langtry	9-53	400	750					—	—		—	
City of Edmonton	Edmonton, Alta			1952	390	750		1	200	BWG	23.7			20.1	DB
Kenyatta Light & Water	Kenyatta, Ind		Kasten & Longworth	1955	390	750		1	330	BWG	36.0			20.2	DB
			Boyd Phelps, Inc	6-53	390	750		1	65	RS	2.0			20.2	
City of Tacoma	Tacoma, Wash	Steam Plant No. 2	Ebasco Services Inc	5-54	375	725		2	11		22.0			17.4	
City of Winnebago	Winnebago, Minn	Municipal	Pfeifer & Schultz	7-53	350	630		1	53	WB	6.7	—		17.4	DB
City of Hope	Hope, Ark		Burns & McDonnell Engrg Co	11-53	200	358					—	—		—	

AC – Allis-Chalmers Mfg Co
Ad – Admiralty
Adl – Admiralty, inhibited
AlB – Aluminum bronze
AlBr – Aluminum brass
AsAd – Arsenical admiralty
EE – English Electric Co
El – Elliott Co
G – Natural gas
GE – General Electric Co
Hy – Hydraulic coupling
L – Lignite
C – Coal, bituminous
CE – Combustion Engineering, Inc
CP – C A Parsons
D – Damper
DB – Dry bottom
Du – Dual turbine and motor drive
AsCu – Arsenical copper
BB – Brown Boveri Corp
Br – Brass
BW – Babcock & Wilcox Co
BWG – Babcock & Wilcox, Goldie-McCullougn
M – Motor drive
Ma – Magnetic
Mi – Murray Iron
Mp – Two motors per
Mt – One motor,
Mu – Muntz metal

– Oil
– Pulverizer
– Regenerat
– Regeneral
– Riley Stok
– Speed cont

ederal and Cooperative Installations

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: Drive	F-D FANS: Air flow control	I-D FANS: Drive	I-D FANS: Gas flow control	Firing	FUEL: Type	FUEL: Heating value, 1000 Btu per lb	FUEL: Ash-softening temperature, F	FEED PUMPS: Drive	FEED PUMPS: Flow control	TURBINES: Number	TURBINES: Capacity, 1000 kw	TURBINES: Manufacturer	TURBINES: Backpressure, psia	TURBINES: No. bleed points	Full-load deaerator pressure, psia	CONDENSERS: Surface, 1000 sq ft	CONDENSERS: No. water passes	CONDENSERS: Tube material	Total boiler capacity incl new units, 1000 lb	Total generator capacity incl new units, 1000 kw
—	DB	42.0	240.0	Re	M	V	M	D	P	C	11.2	1950	3 M	Hy	1[1]	250	WE	1.0	8	110		1	Ad I	1650	250
—	DB	42.0	240.0	Re	M	V	M	D	P	C	11.2	1950	3 M	Hy	1	250	WE	1.0	8	110		1	Ad I	3300	500
—	DB	C	282.0	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	8	100	95.0	1	Ad I	1280	180
—	DB	D	282.0	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	8	100	95.0	1	Ad I	2560	360
—	DB	D	282.0	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	8	100	95.0	1	Ad I	3840	540
—	DB	C	282.0	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	8	100	95.0	1	Ad I	5120	720
14.5	DB	14.6	147.6	Re	M	V	M	D	P	C	11.5	1950	12 M	Hy	4	135	WE	1.0	7	80	60.0	1	Ad I	4080	540
16.1	DB	25.6	228.9	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	7	100	80.0	1	Ad I	5360	720
16.1	DB	25.6	228.8	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	7	100	80.0	1	Ad I	6640	900
16.1	DB	25.6	228.8	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	7	100	80.0	1	Ad I	7920	1080
16.1	DB	25.9	228.8	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	180	GE	1.0	7	100	80.0	1	Ad I	9200	1260
16.1	DB	25.8		Re	M	V	M	D	P	C	12.9	2250	3 M	Hy	1[4]	180	GE	1.0	7	93	75.0	1	Ad I	1280	180
16.1	DB	25.8		Re	M	V	M	D	P	C	12.9	2250	3 M	Hy	1	180	GE	1.0	7	93	75.0	1	Ad I	2560	360
18.6	DB	C	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	1000	135
18.6	DB	D	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	2000	270
18.6	DB	D	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	3000	405
18.6	DB	C	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	4000	540
18.6	DB	D	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	5000	675
18.6	DB	D	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	6000	810
18.6	DB	C	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	7000	945
18.6	DB	C	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	8000	1080
18.6	DB	C	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	9000	1215
18.6	DB	D	237.2	Re	M	V	M	D	P	C	11.5	1950	3 M	Hy	1	135	WE	1.0	7	75	70.0	1	Ad I	10000	1350
18.4	DB	23.0	274.2	Pi	Mc	S,V	Mc	S,V	O,G	O,G	18.8		3 M	Hy	1	125	GE	1.25	6	52	90.0	2	Ad	4100	410
16.0	DB	9.0	69.2	Re	M	V	M	Ma	P,G	C,G	11.4	1900	2 M	Hy	1	60	GE	0.5	5	65	55.0	2	As Cu	575	60
21.1	DB	14.0	49.2	Re	M	V	M	D, Hy	P,O,G	C,O,G	13.8	1950	4 M	R	1	66[6]	WE	0.75	5	75	45.0	1	A I B	3194	216
20.5	—	14.2	67.5	Re	M	V	M	D	O	O	18.3		2 M	Hy	2	40[6]	WE		5	—	40.0	2	A I B	1865	122
20.5	—	14.2	67.5	Re	M	V	M	D	O	O	18.3													1050	100
23.0[9]	DB	8.0	72.0	Tu	M	Hy	M[9]	D[9]	P	C	12.9	2000	2 M	R	1	40[6]	AC	0.75	5	54.1	35.0	2	Ac	1830	95
20.7	DB	11.7	43.5		Mc	V	Mc[9]	V[9]	O,G	O,G	18.0		3 M	R	1	43[6]	AC	0.75	5	50	35.0	2	As Cu	425	40
23.5	DB	19.7	125.0	Tu	M	D, V			G,O	G,O	1000[8]		3 M	R	1	60[6]	WE	0.75	5	80	55.0	2	Mu	1250	120
20.5	DB	...	25.3	Tu	Mo	D	Mo	D	G,O	G,O	1100[8]		6 M	R	2	15[6]	EI	0.75	4	67	14.0	2	Ad	320	30
17.8	...	...	73.5	Re	M	V	M	D, V	P	C,O	13.0	2150	3 M	R	2	40	WE		5	—	25.0	1	Ad	920	100
17.9	DB	...	37.4	Tu	M	D	M	D	P	C	9.7	1980	2 M	R	1	15[6]	AC	0.75	4	60.2	16.0	2	Ac	175	15
21.7	DB	C	54.0	Tu	M	Hy	M	Hy	P	C	10.5	2100	2 M		1	30[6]	WE	0.5	5	60	25.0	2	As Ad	520	45
															1	10	WE	1.25	4	120	12.0	2	As Cu	330	26
22.4	DB	0	20.6	Tu	M	V	M	V	G,O	G,O	1000[8]	—	9 M	R	3	20	WE	0.75	4	Con	17.0	2	Ad	1125	100
22.4	...	...	26.8	Tu	M	V	Mo	D	G	G	1000[8]		1 M, 1 T	R	2	15[6]	GE	0.75	4	50	16.0	2	Ad I	320	30
23.3	DB	8.5	136.6	Re	M	D, Hy	M	Hy	P	C	13.5	2300	8 M	R	4	66[6]	EE	0.75	5	45	27.5	1	Ad I	2600	264
20.9	DB	C	6.7	Tu	Du	D	Du	D	O	C	16.5		2 M, 1 T	R, S	1	20[6]	AC	0.75	4	75	32.5	2	Ad	640	55
21.2	...	...	55.6	Pi	Mo	D, V	M	Ma	P	C	10.0	2100	1 M, 1 T	R	1	30[6]	WE	1.25	5	—	28.0	2	Ad I	600	52.5
22.0	DB	...	23.1	Tu	M	D	M	D	O,G	O,G	18.3		4 M	R	2	15[6]	EI	0.75	4	55	16.0	2	Ad	290	30
21.2	DB	5.5	4.9	Tu	MT	S,V	M	S,D	SS(210)	C,O,G	13.0	2085	1 M, 1 T	S,R	1	7.5	EI	0.75	1	—	10.0	2	Ad	485	17.5
21.2	DB	4.9	7.9	Tu	T	S,V	M, T	S,D	SS(300)	C	12.8	2085	2 M, 1 T	S,R	...	...	...	...	...	...	...	...	...	...	....
22.3	—	...	13.9	Tu	Mo	S,V	Mo	S,D	G,O	G,O	1000[8]		1 M, 1 T	R	1	11.5	GE	1.0	4		12.0	2	Ac	250	19
22.5	—	7.2	16.6	Tu	M	V	M	D, Ma	SS(387)	C	13.5	2500	1 M		1	20	GE	1.0	4	85	13.0	1	Ad	400	55
22.6	—	3.1	10.1	Tu	M	S,V	M	S,D	SS(208)	C	12.7	2100	3 M	R	2	7.5	BB	1.0	3	45	9.5	2	Ad	180	15
22.5	DB	D	14.6	Tu	M	V	M	Ma	L,O,G	L,O,G	7.6	2250	1 M		1	11.5[6]	EI	1.25	4		14.0	2	Ad	260	23
22.2	...	...	7.2		M	V	Du	D	G,O	G,O	1018[8]		1 T	R	1	5	GE	1.25	3	65	6.0	2	Ad	130	10
22.3	DB	...		Tu	M	V	M	D	P,G	C,G	13.8	2600	1 M, 1 T	R	1	12.7	WE	0.75	4		11.0	2	Ad	210	16
22.3	DB			Tu	M	V	M	D	P,G	C,G	13.8	2600	1 M, 1 T	R	1	12.7	WE	0.75	4	—	11.0	2	Ad	335	29
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	7.5	AC	.....	3	...	7.0	2	As Cu	....	17.5
22.1	—	17.0	6.3	Tu	M	V	M	...	P	C	11.2	2100	1 M	S,R	1	11.5	GE	1.0	4	40	...	2	.	400	31.5
22.4	DB	C	6.0	Tu	M	V	M	D	SS(158)	C		2100													
		6.9			M	D	M	D	SS(319)	C	10.5		1 M	R											
22.7	DB	C	12.4	Tu	M	V	M	V	O,G	O,G	18.0		2 M	R	2	4.0[6]	WE	0.5	3	—	5.6	2	Ac	175	11.0
22.1	....	C	C		M	D, V	M	D, V	G	G	980[8]		2 M, 1 Du		1	30[6]	CP	0.75	2	Con	25.0	2	Br	350	30
22.3	DB	...	5.0	Tu	M	V	M	Hy	G	G	975[8]		2 M, 1 T	R	2	5	GE	1.5	3		7.5	2	Ad	105	8
22.1	DB	4.9		Tu	T	V	Du	D	SS	C	12.7		1 M, 2 T		1	5	WE	...	1		...			484	10.5
22.1	—	5.3			M	Hy	M	V	SS(70,[10]	C	9.4	1850	1 M, 1 T	R	1	4	EI	1.0	3	30	5.0	2	Ac	79	7.3
22.3	DB	...	31.0	Tu	M	V	M	S,D Hy	P	L	7.0	2100	1 M, 1 T		1	15	BB	0.75	4		14.0	2	Br	690	26
22.3	DB		53.5	Tu	M	V	M	D Hy	P	L	7.0	2100	3 M		1	25	BB	0.75	4		23.0	2	Br	970	51
—	—	...	...	...	...	...	...	...	...	...	...	...	...	...	1	4	EI		2	—	4.5	2	Ad I	...	6.5
22.3	DE	...	35.7	Tu	M	V	M	Hy	G,O	G,O	950[8]	...	1 M		1	30	CP	0.5	2		32.0	2	Ad Br	1070	90
22.3	DB		69.8	Tu	M	V	M	Hy	G,O	G,O	950[8]		1 M		1	30	BB	0.5	2	—	32.3	2	Ad Br	1400	120
22.2	—	C	C						(213)	C			1 T	R	1	6[6]	EI	1.0	0		8.5	2	Ad		
		0	34.6	Re	Mc	D	Mc	D	O,P	O,C			2 M		1	20	GE	0.5	3	50	27.0	2	Al Br	520	45
22.7	DB	...	3.8	Tu	T	D, V	M	S,D	SS'152'	C	12.0	2100	1 M, 1 T	S,R										113	
—	—	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2.5	WE	0.75	2	—	5.0	2	Ac	50	6

...ized fuel fired
...ator
...ative
...Stokes Corp
...control

Sp – Springfield Boiler Co
SS – Spreader stoker
ST – Stag tat
T – Turbine drive
Tu – Tubular
UI – Union Iron Works

V – Vane control
WB – Wm Bros Boiler & Mfg Co
WE – Westinghouse Electric Co
Wi – Wickes Boiler Co
(210) – Stoker grate area, sq ft

[1] – 8 units ultimately
[2] – Additional data, 2 units listed 3/52, 10 units ultimately
[3] – Revised data, 1st 4 units listed 3/52, 9 units ultimately
[4] – 6 units ultimately
[5] – Revised data, 1st 4 units listed 3/52 survey

[6] – Preferred-standard unit
[7] – Revised data, previously listed 3/52
[8] – Btu per cu ft
[9] – Pressurized furnace
[10] – Traveling grate
[11] – Adding waterwalls and larger superheater to existing two boilers, new rating of 520,000 lb per hr

1953 Design Survey: Typical Industr

Compiled by J. C. McCabe, Associate Editor

Company	Location	Consulting engineers	First Operation, new units	Nominal pressure, psi	Nominal steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Heating surface, 1000 sq ft	Furnace volume, 1000 cu ft	Heat release, 1000 Btu per cu ft per hr
600 PSI AND ABOVE											
U. S. Naval Shipyard	Boston, Mass.		1954	2600	1100	1	25	RS	3.9	1.2	17.0
Dow Chemical Co, Plant 2	Freeport, Texas	Stone & Webster Engrg Co	4-53	1425	900	2	450	RS	35.5	22.6	30.0
Dow Chemical Co, Plant 3	Freeport, Texas	Stone & Webster Engrg Co	10-53	1425	950	2	450	RS	35.5	22.6	30.5
Union Bag & Paper Corp	Savannah, Ga		1950	1425	950	1	520	BW			
International Paper Co	Natchez, Miss		1953	1400	950	1	300	BW	6.6	11.0	38.5
National Lead Co	Fredericktown, Mo	J G White Engrg Corp	1953	1200	Sat.	2	50	FW	5.2	1.9	31.6
Kaiser Aluminum & Chemical Corp	Chalmette, La	Self	9-53	1000	905	9	225	FW	30.4	8.6	35.0
Crown Zellerbach Corp	Port Angeles, Wash	Self	3-54	1000	550 Initial 850 Future	1	170	CE	16.4	7.2	30.0
Columbia-Southern Chemical Corp	Barberton, Ohio	Sargent & Lundy	11-53	975	855	1	385	BW	31.5	14.4	32.9
Mead Corp	Kingsport, Tenn	Self	7-53	975	845	1	150	BW	13.0	10.6	19.6
Sun Oil Co	Toledo, Ohio	Gilbert Associates	12-53	975		1	220	BW	17.2		25.4
Weirton Steel Co	Weirton, W. Va		5-53	975	820	1	325	CE	48.1	29.5	19.0
Bowaters Southern Paper Corp	Calhoun, Tenn	J E Sirrine	3-54	950	825	1 1 2	125 123.2 150	CE		7.1 16.6 11.0	— — —
Cities Service Refining Corp	Lake Charles, La	G M Saathoff	8-53	950	825	1	375	BW	21.7	14.6	38.1
Mead Corp	Chillicothe, Ohio	Self	4-52	950	825	1	72	CE	23.0	7.2	—
U. S. Steel Corp	Gary, Ind	United Engrs & Constructors	6-53	950	825	1	100	BW	16.4	7.6	19.9
Pittsburgh Coke & Chemical Co	Pittsburgh, Pa	Guy Lewis		930	850	1	250	CE	41.9	24.0	—
International Paper Co	Springhill, La		1954	925	825	1	250	CE	23.4	11.8	30.0
Naval Powder Factory	Indianhead, Ind	Mearn, Vreeland, Carlson & Sweatt	1955	925	825	3	150	CE	15.9	9.3	20.0
E I DuPont de Nemours & Co	Camden, S. C.	Ebasco Services Inc	2-52	900	800	2	165	CE	17.9	7.9	25.6
Ford Motor Co of Canada	Windsor, Ont.	H K Ferguson	1-53	900	820	1	200	CE	17.7	11.5	22.2
Naval Shipyard	Boston, Mass.	C T Main	1953	900	825	1	150	RS	15.2		—
Naval Shipyard	Philadelphia, Pa		1954	900	825	1	125	CE			
Republic Steel Corp	Cleveland, Ohio	United Engineers & Constructors	10-52	900	850	2	220	BW	24.4	18.3	17.6
U. S. Marine Corps	Cherry Point, N. C.	W C Olsen	1954	900	825	1	150	RS	15.2		18.0
U. S. Steel Corp	Chicago, Ill.			900	900	1	650				
White Pine Copper Co	White Pine, Mich.	Stone & Webster Engrg Co	1954	875	900	2	170	RS	10.4	14.8	19.1
Ketchikan Pulp Co	Ketchikan, Alaska		1953 1953	860 860	925 825	2 2	150 100	BW BW	21.3 13.0	8.1 4.6	24.6 30.0
Aluminum Co of America	Bauxite, Ark.		9-52	850	950	3	175	FW	22.2	9.75	25.6
California Oil Co	Barber, N. J.	Burns & Roe		725	725	1	172	RS	16.9	8.5	30.8
Rayonier Inc	Jesup, Ga.	Ebasco Services Inc	1-54	725	760	1	135	BW	11.6	6.1	28.6
St. Joe Paper Co	Port St. Joe, Fla.	Cummins & Barnard	1953	725	760	2	200	BW	17.2	9.0	26.8
W T Smith Lumber Co	Chapman, Ala.	Rust Engrg Co	9-52	725	750	1	50	CE	7.5		
St. Joe Paper Co	Port St. Joe, Fla.	Cummins & Barnard	1953	750	760	2	140	CE	40.6	15.3	16.5
National Petro-Chemicals Corp	Tuscola, Ill.	J F Pritchard	5-53	700	750	3	265	CE	23.7	15.8	22.6
Alaska Pine & Cellulose Ltd	Port Alice, B. C.	W O Stevens	6-52	675	725	2	185	CE	20.3		
Allied Chemical & Dye Corp	Frankford, Pa.			675	620	2	230	BW	19.3	8.8	33.3
Dan River Mills Inc	Danville, Va.	United Engrs & Constructors	9-52	675	700	1	200	CE	25.9	14.8	18.5
Dryden Paper Co, Ltd	Dryden, Ont.	R A Hanright	11-53	675	750	1	110	CE	15.4	10.0	21.4
Erie Falls Co Ltd	Duncan Bay, B. C.	H A Simons	6-52	675	650	2	85	CE	10.8		
Milwaukee County Institutions	Wauwatosa, Wis.	Pfeifer & Shultz	2-55	675	750	3	125				
Morton Salt Co	Grand Saline, Texas	Cummins & Barnard	4-50	675	750	1	60	Wi	7.9	3.2	27.7
Phillips Chemical Co	Pasadena, Texas	Chem Constr Corp	10-53	675	675	3	150	Vo	15.1	8.7	24.9
St. Joe Paper Co	Port St. Joe, Fla.	Cummins & Barnard	7-53	675	765	1	150	BW	20.7	7.2	26.0
Thilmany Pulp & Paper Co	Kaukauna, Wis.	Pfeifer & Shultz	4-53	675	700	1	130	BW			
Texas Co	Port Arthur, Texas		3-54	675	715	1	225	FW	17.7	10.4	27.8
Canada Starch Co, Ltd	Cardinal, Ont.	H H Angus	11-53	670	700	1	100	BWG	13.4		22.3
Celanese Corp of America	Rock Hill, S. C.	Self	1952	650	750	2	290	RS	23.9	14.1	18.3
International Paper Co	Natchez, Miss.		1952	650	750	2	113	BW	14.5	14.4	14.1
Naval Air Station	Pensacola, Fla.	Reynolds, Smith & Hills	1953	650	825	2	125	BW	11.4	5.6	28.8
Navy Bureau of Yards & Docks	Jacksonville, Fla.?	Reynolds, Smith & Hills	1954	650	825	3	125	FW	9.3	2.8	50.8
Otsego Falls Paper Mills Inc	Otsego, Mich.	Cummins & Barnard		650	750	1	62.5	Wi			
Shell Oil Co	Houston, Texas		11-52	650	750	2	250	RS	27.2	12.7	28.4
Shell Oil Co	Norco, La.	J F Pritchard	3-54	650	750	3	175	CE	19.6	10.3	24.3
Weyerhaeuser Timber Co	Longview, Wash.	O F Alcorn	5-52	650	720	3	150				
Weyerhaeuser Timber Co	Everett, Wash.	United Engrs & Constructors	9-53	650	725	1	160	BW	20.2	25.1	16.0
Weyerhaeuser Timber Co	Everett, Wash.		9-53	650	725	1	150	BW	11.7	7.1	27.0
Sinclair Refining Co	Houston, Texas	J G White Engrg Corp	9-53	625	725	1	250	BW	23.3	13.2	28.9
Southern Fiberboard Corp	Port Wentworth, Ga.	J E Sirrine Co		625	675	1	160	CE	20.6	9.5	22.0

A – Air cooled
AlB – Aluminum bronze
AlBr – Aluminum brass
AC – Air-X-Changers Mfg Co
Ad – Admiralty
An – Anthracite
AsAd – Arsenical admiralty
BB – Brown Boveri
Bi – Bigelow Co
BL – Black liquor
BW – Babcock & Wilcox Co
BWG – Babcock & Wilcox, Goldie McCullough
C – Coal, bituminous
CE – Combustion Engineering, Inc
CuNi – Copper Nickel
Cy – Cyclone furnace
D – Damper
DB – Dry bottom
DL – DeLaval Steam Turbine Co
Du – Duplex pump
E – Electrostatic
EC – Erie City Iron Works
El – Elliott Co
FW – Foster Wheeler Corp
G – Gas
GE – General Electric Co
H – Hydrogen cooled
HF – Hogged fuel
Hy – Hydraulic coupling
L – Lignite
M – Motor drive
Me – Mechanical
Mi – Murray Iron
Mp – Two motors
MT – One motor
O – Oil
P – Pulverized
Pl – Plate
R – Regulator

1953 Design Survey: Typical Industrial

Compiled by J. C. McCabe, Associate Editor

Company	Location	Consulting Engineers	First operation new units	Nominal pressure, psi	Nominal steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Firing	TURBINES: Capacity, 1000 kw	TURBINES: Speed, rpm	TURBINES: Manufacturer	TURBINES: Backpressure, psia	No. of bleed points	Total boiler capacity, 1000 lb per hr
American Locomotive Co	Dunkirk, N. Y.	Zack C Hinds	5-53	250	450	2	40	CE	SS (120)						80
Agricultural & Tech College	Greensboro, N. C	W C Olsen	9-52	250	Sat	2	30	CE	SS (82)						60
Blitz Weinhard Co	Portland, Ore	C C Moore	1951	250	Sat	2	12	BW	O						48
California School for Deaf	Berkeley, Calif			250	Sat	4	12	BW	O,G						48
Canadian Cottons, Ltd	Cornwall, Ont		10-53	250	388	2	60	BW	SS (133)						175
Caswell Training School	Kinston, N. C	Wiley & Wilson	5-51	250	Sat	2	19	CE	SS (60)	0.4	4500	DL	40	0	58.5
						1	13	CE	SS (40)						
Chemical Construction Co	Nicholas, Fla		1953	250	Sat	1	8.1	Bi	WH						
Cincinnati Industries Inc	Arlington Heights, Ohio	A M Kinney	12-52	250	350	1	28	CE	O						28
Cincinnati Industries, Inc	Lockland, Ohio	A M Kinney	12-52	250	350	1	30	CE	O						37
Cities Services Oil Co	Ponca City, Okla		3-53	250	465	1	50	CE	O,G						254
Dominion Tar & Chemical Co	Montreal, Que	Stadler & Hurter	5-53	250	447	3	30	JI	O						90
E I du Pont de Nemours	Newark, Del		3-52	250	338	2	20	FW	O						60
East Carolina College	Greenville, N C	Wiley & Wilson	10-51	250	Sat	2	35	CE	SS (105)						92
						1	13	CE	SS (40)						
Elmendorf Air Base	Anchorage, Alaska	Bouillon & Griffith	1952	250	Sat	8	15	BW	O						120
A D Ellis Mills, Inc	Monson, Mass	A B Reed		250	500	2	35		O	0.8					
General Fibre Box Co	West Springfield, Mass	Alderman & MacNeish	10-52	250	Sat	1	18	Bi	O						
Goodall-Sanford, Inc	Sanford, Me	J A Stevens	7-51	250	500	1	57	CE	O						183
Heintz Mfg Co	Philadelphia, Pa	Kuljian Corp	12-51	250	Sat	1	60	BW	O						115
International Salt Co	Weyers, N. Y	F Nicolson	1953	250		2	40	BW	SS (120)	1.5	3600	WE	10		80
										1.5	3600	WE	10		
Iowa State College	Ames, Iowa	Brown Engineering	1953	250	506	1	100	MI	TG (320)	3.0	3600	Wo	5.0	2	400
Johns-Manville Corp	Nashua, N. H		11-51	250	400	1	10	FW	O						35
Johns-Manville Corp	Pittsburg, Calif		9-51	250	400	1	25	FW	O,G						80
Kansas State Hospital	Kalamazoo, Mich	Fargo Engineering		250	500	3	60	Wi	SS	2.0	3600	WE	5.0	1	200
						1	80	Wi	TG	2.0	3600	WE	5.0	1	
										2.0	5500	WE	5.0	1	
Koppers Co, Inc	Petrolia, Pa		1-53	250	Sat	1	40	UI	SS (135)						80
Louisville Refining Co	Louisville, Ky		1953	250	401	1	36	Vo	O,G						72
Mead Corp	Nashville, Tenn		8-53	250	Sat	2	28	BW	O,G						74
Medical College of Va	Richmond, Va			250	Sat	1	44	BW	SS (128)						85
Mt. Hope Finishing Co	Butner, N. C		2-53	250	Sat	1	17	Wi	O						85
Nixon Nitration Wk	Nixon, N. J		1952	250	Sat	2	25	BW	O						125
Norfolk State Prison	Norfolk, Mass	R D Kimball	1953	250	Sat	1	30	Bi	O						
						1	30	Bi	C						
Ohio Oil Co	Markham, Texas	Hudson Engineering	1952	250	600	2	25	Wi	G						100
Pennsylvania Salt Mfg	Calvert City, Ky		4-53	250	Sat	2	50	BW	O						150
Price Bros. & Co, Ltd	Kenogami, Que		10-52	250	460	1	150	FW	P						85
Shellman Products Corp	Mt. Vernon, Ohio	Austin Co	2-53	250	366	1	40	BW	SS (88)						304
Shenango Furniture Co	Sharpsville, Pa		9-52	250	500	1	50	BW	SS (164)						
Sinai Hospital	Detroit, Mich	Albert Kahn	1-53	250		2	15	BW	O						30
J M Smucker Co	Orrville, Ohio	Adache & Case		250		1	40	CE	SS						
E R Squibb & Sons Div	New Brunswick, N. J		1952	250	Sat	1	150	BW	O						254
State Hospital	Jamestown, N. D	Pfeifer & Shultz	12-52	250	450					0.5	5000	Wo	20	0	
Stone Container Corp	Chicago, Ill	Carrol, Becntel & Langtry	9-53	250	378	1	30	Wi	O						55
Texas Co	Bayonne, N. J		4-53	250	Sat	1	28	BW	O						97
Texas Co	Casper, Wyo		12-53	250	450	1	115	EC	O,G						400
Union Oil Co	Portland, Ore		1953	250	Sat	1	22	BW	O						
U. S. Naval Shipyard	Bremerton, Wash		1954	250	Sat	1	150	Wi	O						
U. S. Navy	Monterey, Calif	C C Moore	11-53	250	338	3	25	BW	O						
Univ of North Dakota	Grand Forks, N. D	Pfeifer & Shultz	9-53	250	Sat	1	75	WB	SS (148)						148
Univ of Toledo	Toledo, Ohio	C F Hoffman	4-53	250	350	2	28	UI	O						96
Vancouver Gen'l Hospital	Vancouver, B. C	Sandwell & Co	1953	250		2	55	BWG	SS (66)						148
Veterans Home & Hospital	Rocky Hill, Conn			250	Sat	1	20	Bi	O						
Western Electrochem Co	Henderson, Nev	H W Beecher	1953	250	Sat	4	28	BW	O						112
Wyman Gordon Co	N. Grafton, Mass	Anderson-Nichols	3-53	250	406	2	50	BW	O						135
						1	36	BW	O						
Apple Creek State Hospital	Apple Creek, Ohio	Beiswanger & Hoch	4-52	235	401	2	30	UI	SS	1.7	5000	Wo	7.0		
American District Steam Co	N. Tonawanda, N. Y		1-53	225	397	1	12	UI	O						155
Buick Motor Co	Flint, Mich		2-53	225	440	1	225	CE	P						
Greenville Mills, Inc	Greenville, Miss	W H Lambert	5-53	225		3	50	BW	G						150
Russell, Burdsall & Ward	Port Chester, N. Y		1952	225		1	49	SW	O						115
International Grenfell Assoc	St. Antonny's, Mass	Pierce Engrg Co	1952	220	Sat	2	15		O	0.2			45		32
Arborite Co, Ltd	Ville La Salle, Que		1-53	213	377	2	26	CV	O						106
Anaconda Amer Brass Ltd	New Toronto, Ont		3-53	200	400	1	50	BW	TG (180)						
Atlas Steels Ltd	Welland, Ont		1-53	200	448	1	40	JI	SS (108)						90
Blackford Window Glass Co	Vincennes, Ind		7-52	200	Sat	2	10	UI	SS						20
Cadillac Motor Car Div	Detroit, Mich			200	Sat	4	100	BW	O,G						400
Caterpillar Tractor Co	York, Pa	Whitman Requardt Assoc	7-53	200	387	2	30	Wi	SS (144)						60
Consumers Co-op Refineries	Regina, Sask		9-52	200	370	1	20	FW	O,G						
Dept of National Defense	Greenwood, N. S	Kearns & Bromley	5-53	200	345	4	25	DBr	UF						25
Donohue Brothers Ltd	Clairevaux, Que		4-52	200	353	1	30	CV	SS (198)						145
Eaton Paper Corp	Pittsfield, Mass		1953	200	Sat	2	10	Bi	O						

An – Anthracite
Bi – Bigelow Co
BW – Babcock & Wilcox Co
BWG – Babcock & Wilcox, Goldie McCullough
C – Coal, bituminous
CE – Combustion Engineering, Inc
CP – C A Parsons
CV – Canadian Vickers Ltd
DBr – Dominion Bridge Co, Ltd
DL – De Laval Steam Turbine Co
EC – Erie City Iron Works
EM – Edge Moor Iron Works Inc
FW – Foster Wheeler Corp
G – Gas
GE – General Electric Co
JI – John Inglis Co, Ltd
Ke – Keeler
MI – Murray
O – Oil
P – Pulver

Industrials, Institutionals: Below 250

Compiled by J. C. McCabe, Associate Editor

Company	Location	Consulting Engineers	First operation new units	Nominal pressure, psi	Nominal steam temperature, F	BOILERS Number	BOILERS Capacity, each, 1000 lb per hr	BOILERS Manufacturer	Firing	TURBINES Capacity, 1000 kw	TURBINES Speed, rpm	TURBINES Manufacturer	TURBINES Backpressure, psia	No. of bleed points	Total boiler capacity, 1000 lb per hr
Youngstown Hospital Assn	Youngstown, Ohio	P Fleming	2-53	160	.....	3	53	CE	C	.....	.....	.....	.....	.....	53
Univ of Colorado	Boulder, Colo		1-50	155	Sat	1	35	Wr	G,O	.....	.....	.....	.....	.....	117.5
			1-50	155	Sat	1	49.5	CE	G,O	.....	.....	.....	.....	.....	
Highway Paving Co	Montreal, Que	Wiggs, Walford, Frost, Lindsay	12-52	153	360	2	17.5	VK	O	.....	.....	.....	.....	.....	77
150 PSI															
American Thermos Bottle Co	Norwich, Conn		7-53	150	Sat	1	10	Bi	O	.....	.....	.....	.....	.....	
Associated Realty Co	New Haven, Conn	Jack Fanning	12-52	150	Sat	1	10	Bi	O	.....	.....	.....	.....	.....	
Canadian Pacific Railways	Winnipeg, Man		.....	150	466	3	30	.....	SS	.....	.....	.....	.....	.....	
Caterpillar Tractor Co	Joliet, Ill	Giffels & Valet	5-51	150	Sat	2	80	.....	SS (137)	.....	.....	.....	.....	.....	160
Children's Hospital	San Francisco, Calif		.....	150	360	1	41	EC	O,G	0.13	750	GE	3	3	
Consolidated Chemical Industries	Baytown, Texas		1953	150	Sat	2	10	Bi	WH	.....	.....	.....	.....	.....	
C B Cottrell & Sons Co	Pawcatuck, Conn		1953	150	Sat	1	10	Bi	O	.....	.....	.....	.....	.....	
Crown Petroleum Corp	Hartford, Conn		7-52	150	Sat	1	7.3	Bi	O	.....	.....	.....	.....	.....	
Grand Trunk Western R R Co	Detroit, Mich		.....	150	Sat	2	4.9	Bi	O	.....	.....	.....	.....	.....	
Heckscher Home for Children	New York, N. Y.		5-52	150	Sat	1	8	Bi	O	.....	.....	.....	.....	.....	
Holyoke Card & Paper Co	Springfield, Mass		1-53	150	Sat	1	6	Bi	O	.....	.....	.....	.....	.....	
H P Hood & Sons	New Haven, Conn		6-53	150	Sat	1	4.9	Bi	O	.....	.....	.....	.....	.....	
E Ingraham Co	Bristol, Conn		7-53	150	Sat	1	7.5	Bi	C	.....	.....	.....	.....	.....	
Institution for Delinquents	Napanock, N. Y.		10-53	150	365	4	10.5	EM	O	.4	4650	Wo	10	.....	42
International Silver Co	Meriden, Conn		9-52	150	Sat	1	10	Bi	C	.....	.....	.....	.....	.....	
Johnson & Crittenden Sts School	Philadelphia, Pa	A E D'Amby	1953	150	Sat	2	3.2	Bi	An	.....	.....	.....	.....	.....	
Kenyon's Cleaning Co	Westerly, R. I		4-53	150	Sat	1	4	Bi	O	.....	.....	.....	.....	.....	
James Lees & Sons	Glasgow, Va	Kuljian Corp	.....	150	366	1	35	.....	C	.....	.....	.....	.....	.....	115
Lynn Hospital	Lynn, Mass		8-53	150	Sat	1	10	Bi	O	.....	.....	.....	.....	.....	
W H Mason Lumber Co, Inc	Elkins, W. Va		7-52	150	Sat	1	4.7	Bi	W	.....	.....	.....	.....	.....	
Commonwealth of Mass	Boston, Mass		4-53	150	Sat	2	4	Bi	C	.....	.....	.....	.....	.....	
New Haven State Teachers College	New Haven, Conn	Hubbard Lawless & Blakely	10-52	150	Sat	1	8.6	Bi	O	.....	.....	.....	.....	.....	
Osborn Mfg Co	Henderson, Ky	H K Ferguson	10-51	150	327	1	7	EC	SS	.....	.....	.....	.....	.....	12
Pownal State School	Pownal, Me		.....	150	.....	1	6	BW	C	.....	.....	.....	.....	.....	50
Anna B Pratt School	Philadelphia, Pa	A E D'Amby	1953	150	Sat	3	4	Bi	An	.....	.....	.....	.....	.....	
Remington Rand, Inc	Middletown, Conn		5-52	150	Sat	1	4.9	Bi	O	.....	.....	.....	.....	.....	
Reynolds Metals Co	Corpus Christi, Texas	J G Turnbull	4-52	150	.....	2	6.5	EC	O	.....	.....	.....	.....	.....	13
John A Roebling's Sons Corp	Trenton, N. J		10-53	150	450	2	30	BW	O	.....	.....	.....	.....	.....	45
Saskatchewan Training School	Moose Jaw, Sask	E Stuhr	1953	150	366	2	18	FW	O	.....	.....	.....	.....	.....	
Spring City Bleach & Dye Works	Spring City, Pa	Wertz Eng	.....	150	.....	1	90	EC	O	.....	.....	.....	.....	.....	
I L Stiles & Sons Brick Co	North Haven, Conn		8-52	150	Sat	1	10	Bi	O	.....	.....	.....	.....	.....	
Strathmore Paper Co	W Springfield, Mass		3-52	150	Sat	1	12	Bi	C	.....	.....	.....	.....	.....	
Swift River Woolen	Westerly, R. I		10-52	150	Sat	1	7.5	Bi	C	.....	.....	.....	.....	.....	
Talleys Veneer & Crate Co	Adel, Ga	Jack Fanning	12-52	150	Sat	1	8.1	Bi	W	.....	.....	.....	.....	.....	
U. S. Veterans Administration	Los Angeles, Calif		.....	150	365	3	50	UI	O,G	.....	.....	.....	.....	.....	180
						1	30								
Villanova College	Villanova, Pa	Gilboy & O'Malley	.....	150	358	2	30	CE	TG	.....	.....	.....	.....	.....	
Youngstown Hospital Assn	Youngstown, Ohio		.....	150	.....	3	31	.....	C	.....	.....	.....	.....	.....	
149 PSI AND BELOW															
George M Brewster & Sons	Bogota, N. J	F L Smith	7-53	148	Sat	1	25	Bi	SS	.....	.....	.....	.....	.....	
U. S. Army Signal Corps	Tobyhanna, Pa		8-53	135	358	4	61	.....	TG (240)	.....	.....	.....	.....	.....	244
Goodyear Tire & Rubber Co	Cartersville, Ga		9-52	130	Sat	2	15	Wr	UF (58)	.....	.....	.....	.....	.....	30
Canadian Pratt & Whitney Aircraft	Jacques Cartier, Que	T Pringle	6-52	125	.....	3	15	VK	O	.....	.....	.....	.....	.....	
Cutler Hammer Inc	Milwaukee, Wis		1-52	125	Sat	3	18	Wi	O	.....	.....	.....	.....	.....	
Danbury Hospital	Danbury, Conn		4-52	125	Sat	1	10	Bi	O	.....	.....	.....	.....	.....	
Fuller Mfg Co	Milwaukee, Wis		.....	125	352	1	55	Wi	C	.....	.....	.....	.....	.....	32
Greater Pittsburgh Airport	Pittsburgh, Pa	T F Rockwell	11-51	125	353	3	10.9	Ke	O, An	.....	.....	.....	.....	.....	60
Commonwealth of Kentucky	Frankfort, Ky	E R Ronald	10-52	125	353	1	30	Vo	U F (97.5)	.....	.....	.....	.....	.....	30
Louisburg Fisheries Ltd	Louisburg, N. S	Wiggs Walford, Frost Lindsay	2-52	125	350	2	15	FW	SS	.....	.....	.....	.....	.....	
Marine Corps Schools	Quantico, Va	Kuljian Corp	6-52	125	353	2	60	Vo	O	.....	.....	.....	.....	.....	235
Meredith Publishing Co	Des Moines, Iowa	Elmer Borg	9-52	125	.....	2	12	MI	O	.....	.....	.....	.....	.....	
Monsanto Chemical Co	Nitro, W. Va		9-53	125[3]	350	1	75	EC	SS (154)	.....	.....	.....	.....	.....	
Moretrench Co	Rockaway, N. J		7-52	125	Sat	1	4.9	Bi	O	.....	.....	.....	.....	.....	
Nu Way Laundry & Cleaner	Pulaski, Tenn		7-52	125	Sat	1	5	Bi	C	.....	.....	.....	.....	.....	
U. S. Public Health Service Hospital	San Francisco, Calif	Coddington	2-52	125	.....	3	17	EC	O,G	.....	.....	.....	.....	.....	34
Westvaco Chemical Div	Lawrence, Kans	Bechtel Corp	7-52	125	344	1	14	BW	O,G	.....	.....	.....	.....	.....	140
Housing Authority of Baltimore	Baltimore, Md	Egli & Gompf	11-52	120	.....	2	70	EC	O	.....	.....	.....	.....	.....	40
Canadian Tube & Steel Products	Montreal, Que	R A Hanright	11-52	100	Sat	2	20	FW	SS	.....	.....	.....	.....	.....	
City of New York	New York, N. Y		...	100	Sat	1	4	Bi	O,WH	.....	.....	.....	.....	.....	
Reddy Memorial Hospital	Montreal, Que	B R Perry	8-53	100	.....	2	4	CV	O	.....	.....	.....	.....	.....	19.0
Sun Oil Co	Newark, N. J		...	100	335	1	12.6	Bi	O	.....	.....	.....	.....	.....	

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1953 Design Survey: Typical Industri ti

Compiled by J. C. McCabe, Associate Editor

Company	Location	Consulting engineers	First Operation, new units	Nominal pressure, psi	Nominal steam temperature, F	BOILERS				Furnace volume, 1000 cu ft	Heat release, 1000 Btu per cu ft per hr		
						Number	Capacity, each, 1000 lb per hr	Manufacturer	Heating surface, 1000 sq ft				
American Box Board Co	Fiber City, Mich	Carroll, Bechtel & Langtry	6-53	600	750	1	200	BW	14.9				
Carbide & Carbon Chem	Seadrift, Texas	Brown & Root	1954	600	750	2	200	RS	12.2	10.0	28.8	DB	T
Carbide & Carbon Chem	S. Charleston, W. Va		12-53	600	700	1	250	RS				ST	
Charles Pfizer & Co	Groton, Conn	Baker & Spencer	2-53	600	725	1	115	CE					
Detroit Sulphite Pulp & Paper	Detroit, Mich	Boddy-Benjamin Associates	12-53	600	750	1	120	CE	18.7	6.0	27.7		
E. I. du Pont de Nemours	Kingston, N. C.	Burns & Roe	11-52	600	700	2	130	BW	7.7	6.6	25.8		
Hudson Motor Co	Detroit, Mich	Boddy-Benjamin Associates	2-53	600	720	3	100	BW	9.2	4.5	30.6		
Kirby Lumber Co	Silsbee, Texas	H. E. Bovay, Jr.	3-54	600	750	1	100	CE			35.5		
						1	125	CE	12.4	4.4	41.5		
Marine Corps Recruit Depot	Parris Island, S. C.	J. E. Sirrine	1954	600	750	1	50	RS					
Pacific Mills Ltd.	Ocean Falls, B. C.		7-53	600	700	1	45	BW					
Powell River Co. Ltd.	Powell River, B. C.	Sandwell & Beecher	6-52	600	300	1	270	BWG	21.2	24.4	17.3	DB	
Procter & Gamble Co.	Sacramento, Calif.		3-53	600	Sat	2	50	BW					
Thilmany Pulp & Paper Co.	Kaukauna, Wis.	Pfeifer & Shultz	3-52	600	700	1	115	BW					
U. S. Naval Station	Kodiak, Alaska	Leo A. Daly	1955	600	750	3	30	FW	3.8		52.0		
BELOW 600 PSI													
Ciba States, Ltd.	Toms River, N. J.		9-52	550		2	50	RS	6.2	3.0		DB	
Dow Corning Corp.	Midland, Mich.	Boddy-Benjamin Associates	12-53	550	Sat	1	90	CE	14.1	6.2	18.9	DB	
Polymer Corp., Ltd.	Sarnia, Ont.	H. G. Acres	4-53	525	650	1	440	CE	43.3	21.6		DB	
Hudson Pulp & Paper Corp.	Palatka, Fla.	J. E. Sirrine		500	700								
Merck & Co.	Danville, Pa.	Wearn, Vreeland, Carlson & Sweatt	5-53	500	650	2	60	BW	9.0	4.2	18.8	DB	
Pure Oil Co.	Toledo, Ohio		10-53	500	555	2	65	CE	6.5		40.2		
Appalachian State Teachers	Boone, N. C.		4-51	475	610	1	30	RS					
Bradford Dyeing Assn.	Bradford, R. I.	J. A. Stevens Inc.	10-52	475	600	1	80	FW	7.8	4.1	25.6	DB	
Nekoosa Edwards Paper Co.	Nekoosa, Wis.	C. T. Main		475	700	1	110	CE	11.9	9.1		DB	
Norwich State Hospital	Norwich, Conn.	N. E. Argraves & Assoc.	1952	475	645	3	35	CE					
Pan American Petrol. & Transp. Co.	Texas City, Texas		1953	475	700	2	105	BW	22.5	5.4	30.0	DB	
Buckeye Steel Castings	Columbus, Ohio		5-53	450	700	1	70	BW	7.7	3.5			
Diamond Alkali Co.	Painesville, Ohio		6-53	450	489	3	110	Vo	16.0	4.8	32.5		
Freeport Sulphur Co.	Garden Island Bay, La.	Sargent & Lundy	11-53	450	455	4	71	BW	7.6	3.1	30.5		
Garlock Packing Co.	Palmyra, N. Y.	L. J. Sforzini	7-53	450	600	1	100	RS	10.0	3.8	31.2		
Globe Oil & Refining Co.	Lemont, Ill.		4-53	450	750	1	100	Vo	9.2				
Int'l. Graphite & Electrode	Niagara Falls, N. Y.	Zack C. Hinds	7-53	450	750	1	50	BW	7.7	2.9	28.0	DB	
Nasa Kevinator Corp.	Milwaukee, Wis.		12-52	450	750	1	100	MI	6.9	3.8			
N. Carolina State College	Raleigh, N. C.	Pierson & Whitman	1-51	450	750	2	60						
Phillips Petroleum Co.	Sweeny, Texas		9-53	450	560	1	325	Vo	31.4	15.7	26.5		
Republic Rubber Div.	Youngstown, Ohio		5-53	450	650	1	150	BW	12.8	7.7	22.7	DB	
Univ. of N. Carolina	Raleigh, N. C.	W. C. Olsen	12-50	450	750	1	70	CE					
U. S. Capitol Bldg.	Washington, D. C.	Guy B. Panero	9-53	450	750	3	110	Wi	14.2	5.7	22.6	DB	
Woodward Iron Co.	Woodward, Ala.	Rust Engrg. Co.	9-52	450	600	2	125	EC	18.3				
Phillips Chemical Co.	Pasadena, Texas		10-52	425	422	2	25	Vo	2.9	0.9	25.0		
Univ. of Wyoming	Laramie, Wyo.	Lutz & May	9-53	425	750	1	55		5.4	3.0	27.2		
Garden City Co.	Garden City, Kans.	Lutz & May	5-53	420	750	1	100	BW	7.7	4.7	27.6	DB	
Ed. Levy & Co.	Lafayette, Ind.	Ferguson Co.	7-53	410	700	3	55	BW	6.5	6.3	13.0	DB	
American Hair & Felt Co.	Milwaukee, Wis.	Gates, Weiss & Kramer	3-53	400	600	1	25	UI	3.8	1.2	29.0		
Imperial Oil Co.	Regina, Sask.		12-53	400	750	1	50	BWG	3.5	2.9			
Buckeye Cab Co.	Memphis, Tenn.	Stone & Webster Engrg. Co.	1953	400	700	1	150	CE	9.4	15.3	14.8	DB	
Dow Chemical Canada Ltd.	Hamilton, Ont.	A. G. McKee Co.	12-52	460	634	1	25	BWG	9.1			DB	
Barnard White Co.	Nampa, Idaho	Stagmaster & Breyer	1953	400	550	4	40	BW					
U. S. Navy	Great Lakes, Ill.		3-53	400	550	1	130	RS	11.0	6.1		DB	
Southwest Tire & Rubber Co.	Dalsen, Ala.	Sargent & Lundy	11-53	350	Sat	1	40	RS	4.2	4.0	17.4		
Southwest Tire & Rubber Co.	Los Angeles, Calif.		1-53	350	Sat	1	65	BW	3.3	3.3	32.0		
Southwest Tire & Rubber Co.	Topeka, Kans.		3-52	350	Sat	1	70	BW	7.3	3.1	30.0		
U. S. Air Force	Pentagon, Wash.	Guy B. Panero	6-54	350	370	3+R	110+R		11.0	3.3	29.0		
Hamilton City Power Co.	Hamilton City, Calif.	A. M. Kinney	11-52	325									
Arthur D. Jones	Phoenix, Ariz.	C. C. Moore	3-52	300	400	2	22	BW	2.9	0.5	46.0		
Chemstrand Corp.	Decatur, Ala.	Lockwood & Greene	7-52	300	600	3	100	FW	3.1	5.3	23.5	DB	
Eastern Stainless Steel	Baltimore, Md.	Chas. C. Hinds	3-52	300	Sat	1	50	BW	6.2		23.8		
Fairchild Engine & Airplane	Farmingdale, L. I.	Fletcher Thompson	1953	300		1	40	Bi	4.2	1.7	39.0	DB	
Ford Motor Co.	Dearborn, Mich.	Albert Kahn	1-52	300	450	3	200	CE	19.3	11.0	15.7		
Monsanto Chemical Co.	Avon, Calif.	United Engrs. & Constructors	12-53	300	Sat	2	25	BW	3.1	0.7	50.2		
Phillips Petroleum Co.	Borger, Texas		1953	300	737	1	150	BW	13.4	5.2	34.9		
Phillips Petroleum Co.	Midland, Texas		1-53	300	700	3	55	Wi	2.7	0.6	39.3		
Phillips Petroleum Co.	Pampa, Texas		12-53	300	700	1	55	Wi	5.9	2.7	32.8		
Phillips Petroleum Co.	Kingsmill		1952	300	700	2	55	Wi	2.0	0.5	57.5	DB	
Southwestern Portland Cement Co.	Red Rock, Okla.	R. R. B. Dowan	1-53	300	Sat	2	125	BWG	17.8	7.3	20.0		
State Hospital	Lakeland, Fla.	Kelley & Wilson	9-51	300	506	2	50	BW					
						1	25	BW				DB	
Texas Co.	Amarillo, Texas		9-54	300	500	3	150	EC	16.5	7.8	24.8		
U. S. Rubber Co.	Mishawaka, Ind.	Boddy-Benjamin Associates	2-53	300	Sat	3	125	RS	15.3	8.6	18.7		
			12-53	275	500	2	140	FW	18.0	7.7	22.3	DB	
Abitibi Power & Paper Co.	Iroquois Falls, Ont.		12-52	275	500	1	140	CE	18.0		17.6		
Chemstrand Corp.	Decatur, Ala.			275	500	3	100	FW	12.7	5.3			
N. Carolina Sanatorium	Goldsboro, N. C.	Bernard Clocker	6-52	275	Sat	1	30	BW					
						1	50	BW				DB	
Hammermill Paper Co.	Windsor Locks, Conn.	Albert Kahn	3-52	260	452	3	40	RS	5.1	2.6	18.2		

Industrial Plants, 250 PSI and Below

Compiled by J. C. McCabe, Associate Editor

Company	Location	Consulting Engineers	First operation new units	Nominal pressure, psi	Nominal steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Firing	TURBINES: Capacity, 1000 kw	TURBINES: Speed, rpm	TURBINES: Manufacturer	TURBINES: Backpressure, psia	No. of bleed points	Total boiler capacity incl new units, 1000 lb	Total generator capacity incl new units, 1000 kw
Fafnir Bearing Co	New Britain, Conn		1953	200	Sat	1	30	Bi	O							
General Motors Corp	McCook, Ill			200	416	2	150		C							
Grossedreck Bros. Brewing Co	St. Louis, Mo	Roger-Schmidt		200	360	1	50	Vo	C							
Iberia Sugar Coop.	New Iberia, La.	E. A. Rose	1953	200	Sat	1	34	Bi	[1]							
International Harvester	Chicago, Ill.			200	388	1	60	Vo	TG (168)						150	
Jay Mfg. Co.	Claremont, N. H.	Frag, Bracket & Durgin	7-52	200	Sat	1	23	Wi	C						64	
Mack & Co.	Albany, Ga.	Wearn, Vreeland, Carlson & Sweatt	1954	200	425	2	80	BW	O G [2]						160	
Moore Drydock Co.	Oakland, Calif.	C. E. Bentley	1952	200	Sat	1	33	CE	O, G						33	
Moosehead Breweries, Ltd.	Fairville, N. B.		1951	200	Sat	1	10	FW	O						18	
Pennsylvania, Commonwealth	Slippery Rock, Pa.	Rust Engrg. Co.	1952	200	353	2	25	BW	UF (72)						70	
Phillips Petroleum Co.	Goldsmith, Texas		1953	200	353	1	13	Vo	G						91	
Phillips Petroleum Co.	Woods Cross, Utah	Fluor Corp.	10-52	200	450	1	25	Ul	G O						65	
Reading Co.	Reading, Pa.	Gilbert Assoc.	1952	200	405	1	60	CE	TG (220)						120	
Taylor Fiore Co.	La Verne, Calif.		9-51	200	350	1	10	BW	O, G							
Timken Roller Bearing Co.	Columbus, Ohio	C. M. Maratta	1-53	200	366	1	40	BW	SS (120)						80	
U.S. Tucker's Products Div.	Jacksonville, Ill.		10-52	200	420	2	65	Vo	O, G						130	
Univ. of Buffalo	Buffalo, N. Y.		3-53	200	Sat	1	25	BW	UF						75	
Westvaco Chem. Div.	S. Charleston, W. Va.	R. M. Parsons	1953	200	Sat	1	17	Bi	WH							
125 TO 199 PSI																
Army Chemical Center	Edgewood, Md.		1953	199	Sat	2	36	Bi	O							
Western Carolina Teachers	Cullowhee, N. C.	Six Assoc.	10-52	180	Sat	1	35	BW	SS (95)						57	0.1
Babcock-Williams Co. of Canada	Montreal, Que.			178	380	3	7	CV	An						21	
E. I. du Pont de Nemours	Memphis, Tenn.		1952	175	Sat	2	60	BW	G						120	
General Electric Co.	Somersworth, N. H.	Lockwood-Green	1-53	175	Sat	1	28	BW	O						52	
Globe Dye Works Co.	Philadelphia, Pa.		5-52	175	Sat	1	40	BW	G						40	
Noranda Mines, Ltd.	Noranda, Que.			175	525	4	22.5	Ji	WH, O	2.6 3.0	3950	CP		1	90	5.6
Atomic Energy of Canada, Ltd.	Chalk River, Ont.	C. D. Howe	2-53	171	453	1	50	FW	SS (120)						150	
Union Electrochemical Co.	Tacoma, Wash.	Bumstead-Woolford	6-53	165	373	1	100	RS	O						232	
Spring Grove State Hospital	Catonsville, Md.	Reamies & Assoc.	11-52	165	Sat	2	60	EC	SS (160)						180	
Univ. of Colorado	Boulder, Colo.		1-50	165	Sat	1	33	CE	G, O						117.5	
Signal Oil Co.	Norwalk, Calif.	R. M. Parsons	6-53	165	Sat	1	4.9	Bi	WH							
Ohio Boxes, Inc.	Barberton, Ohio		1-52	165	337	1	10	BW	SS (42)						20	
American Locomotive Co.	Auburn, N. Y.		3-53	160	338	1	15	Ke	UF						60	
Boeing Airplane Co.	Seattle, Wash.	Bouillon & Griffith Austin Co.	1952 1953	160 160	Sat Sat	2 2	18 40	BW BW	O O						36 80	
Central Washington College	Ellensburg, Wash.	Bouillon & Griffith	1953	160	Sat	1	25	BW	C						25	
Children's Hospital Society	Los Angeles, Calif.	L. Kelly	4-53	160	Sat	2	13.8	BW	O, G						27.6	
Children's Orthopedic Hospital	Seattle, Wash.	D. C. Griffith	1952	160	Sat	2	12	BW	O						24	
Dominion Brown Co., Ltd.	Winnipeg, Man.		12-53	160	353	1	20	BWG	O, G						34	
Corps of Engineers	New Cumberland, Pa.	Kuljian Corp.	11-52	160	366	3	50	EC	TG (228)						150	
Dept. of the Air Force	San Antonio, Texas	Kuljian Corp.	1953	160	366	2	50		G						100	
Dept. of Corrections	Lancaster, Calif.		7-53	160	360	3	27	EC	O, G						81	
Dept. of National Defence	St. Hubert, Que.	Ross, Patterson, Townsend & Fish	11-52	160	353	3	25	FW	UF (81.5)						75	
Eastern N. Carolina Sanitorium	Wilson, N. C.	Wiley & Wilson	5-52	160	Sat	1	10.5	EC	UF (52.5)						21	
Electric Auto-Lite Co.	La Crosse, Wis.			160		1 1 1	45 25	BW BW	SS (127) SS (72)						70	
General Hospital	San Francisco, Calif.	G. M. Simonson	3-53	160	Sat	3	22.7	Bi	O, G							
Hollingsead Mills Corp.	Fitzgerald, Ga.	Jack Fanning	11-52	160	Sat	1	8.8	Bi	G							
Greenwood Leflore Hospital	Greenwood, Miss.		3-52	160		2	9.7	BW	O						19.4	
Henry J. Heinz Co.	Helmetta, N. J.	A. M. Kinney	8-53	160	Sat	3	18	BW	O						54	
Holiday Refineries, Ltd.	Saskatoon, Sask.	F. Robin	11-52	160	371	1	25	Wi	O						56	
Holyoke Hospital	Holyoke, Mass.	Alderman & MacNeish	12-52	160	Sat	1	12	Bi	O							
H. & B. Jones, Inc.	New Haven, Conn.		6-53	160	Sat	1	27	Bi	O							
Kaiser-Frazer Corp.	Detroit, Mich.		1951	160	Sat	3	20	EC	O, G						60	
Kendall Grain Co.	Danville, Ill.	Nelson & Nettnin	7-53	160	Sat	1	80		TG (150)						130	
Kenwood Hospital	Oakland, Calif.		8-52	160	Sat	1	17	Bi	O, G							
Kenyon University	Orford, Ohio	Fosdick & Hilme	1-52	160		3		Vo	UF (128)						110	
Kingsville Naval Air Station	San Diego, Calif.	R. J. Michel	6-53	160	371	4	28.5	Ul	O C						114	
Kimberly-Clark Corp.	Niagara Falls, N. Y.		10-53	160	Sat	1	50	BW	O, G						95	
Kleinert Rubber Co.	Stamford, Conn.	Wescott & Mapes	2-52	160	Sat	1	12	Bi	O							
Knox Boxes, Inc.	Paso Robles, Calif.	S. Smyth	7-53	140	345	2	12.5	BW	O						25	
Knox County Board of Education	Rocky River, Ohio		4-53	160		1	10	BW	C, G							
Kodiak Hospital	Fairbanks, Alaska			160		2	6.5	EC	UF						13	
Kolb-Lena Co.	Phoenix, Ariz.	G. E. Quick	5-53	160	Sat	3	8	BW	O, G							
Kolb-Lena Co.	Wichita, Kan.	C. W. LeVelle	4-52	160	430	3	120	EC	O						360	
Kolb-Lena Mercy Hospital	Dubuque, Iowa		1-52	160		2	22	WB	SS (41.6)						45	
Kolb-Lena Memorial Hospital	Galt, Ont.	H. H. Angus	8-53	160	371	2	12.5	BW	TG (64)						25	
Kolb-Lena Texas State Teachers	San Marcos, Texas	H. Smith		160	363	2	18	EC	G						36	
Kolb Co.	Port Neches, Texas		7-53	160	361	1	60	EC	O, G						240	
U.S. Naval Training Center	San Diego, Calif.	M. A. Nishkian	1-53	160	366	5	37.5	Ul	O						187.5	
Western North Carolina Sanitorium	Black Mt., N. C.	Six Assoc.	9-52	160	Sat	1	18	EC	UF (63)						33	

Stoker Corp
Stoker
-grate stoker
Stoker

Ul – Union Iron Works
Vo – Henry Vogt Machine Co
VK – Vickers Keeler
W – Wood

WB – Wm Bros Boiler & Mfg Co
WE – Westinghouse Electric Corp
WH – Waste heat
Wi – Wickes Boiler Co

Wo – Worthington Corp
(120) – Stoker grate area, sq ft

1 – Bagasse
2 – Future bituminous coal
3 – Design pressure 700 psi

itutional Steam Plants, Above 250 Psi

DUST COLLECTORS		F–D FANS		I–D FANS			FUEL			FEED PUMPS		TURBINES						CONDENSERS				
Mechanical	Electrostatic	Drive	Air-volume control	Drive	Gas volume control	Firing	Type	Heating value, 1000 Btu per lb	Ash-fusion temperature, F	Drive	Flow control	Capacity, 1000 kw	Speed, rpm	Manufacturer	Backpressure, psia	No bleed points	Generator cooling	Surface, 1000 sq ft	No. water passes	Tube material	Total boiler capacity incl new units, 1000 lb	Total generator capacity incl new units, 1000 kw
AND ABOVE																						
—	—	M	D	M	D	O	O	18.9		2 M	R											
—	—	M	E	M	D	G	G	1.0^{14}		4 M	R	60.0	3600	WE			H	55.0	1	A I Br	3700	220
—	—	M	D	M	D	G	G	1.0^{14}		3 M	R	40.0	3600	GE		2	H	37.5	1	A I Br	1800	120
—	—	T	S,V	T	S D,V	O	O	18.5													1238	36
—	—	T	S			G	G	1.0^{14}		2 T	S	15.0	3600	GE	89.7	1	H				1051	28.5
—	—	M	D	M	D	G O	G C	1.0^{14} 18.5		2 M 1 T	R										100	
—	—	M	V	M	D	G	G	1.0^{14}		17 M 2 T	R	2 - 12.5 14-23.0	3600	GE	1.25	1 3 1 4	A I H I	16.0	2	A I B	3375	347
—	—	T	V	T	S,D	SS(304)	O	HF	18.2												440	
—	—	M	V			Cy	C		11.0	2000	2 M	R	15.0	3600	WE	1	1	H	22.5	2	Ad		
—	—	M	V	MT	S D	P	C,O		13.5	2100	3 T	S	6.0	3600	GE	1.25	1	A	6.5	2	Ad	575	14.5
—	—	M	D	M	D	O G[3]	G															
—	—					P	G[1]		0.09^{14}		2 M	R										
—	E					BL	BL	[2]	4 6 6.5 18.5		2 M, 1 Du	R	10.0 10.0	3600 3600	GE GE	50.0	2	A A	7.3	2	Ad	550	20
—	—					O G	O															
—	—	M	V	MT	V	O,G	G		1.0^{14}		1 T	R										1905	50
—	E	M	D	M	H₂	BL	BL		5.2		2 T	S	7.5	3600	GE	0.75	2	A	6.5	2	Ad	572	28
—	—	T	S,D	T	S	TG(474)	[4]	[3]	0.5^{14} 10.2		2 T	R										2180	
—	—	T	D,V	T	V	G	G		0.95^{14}		2 T	S,R										750	15
—	—	T	S			G	G		1.0													1433	
—	—	MT	D	MT	D	P	C,O		13.5	2000	2 M, 1 T	R	5.0	3600	GE	10.0		A				450	13
—	—	M	D	M	O	SS(345)	C		13.0	2400	2 M, 1 T		5.0	3600	GE	57.0	1	A				420	10
—	—	M	D V	M	D,H₂	P	C		12.5	2000	2 M	R	32.0	3600	[5]		2	H	27.0	2	Ad	840	87
—	—	MT	D	MT	D	P	C,O		13.0	2000	1 M, 1 T	R	7.5	3600	EI	195		A					
—	—	M	D	M	D	O,G[15]	O,G		18.0		2 M	R										740	23
—	—	MT	V	T	D	P, I[3]	C				2 M, 1 T		15.0	3600	AC	260		A				900	37.5
—	—	MT	D	MT	D	P,C	C		12.5	2100	1 M, 1 T		5.0	3600	Wo		1	A		2		350	15
—	—	M		M		O,G							60.0				5	H	55.0	1			
—	—	M	D	M	D	P,	C		12.1	2100	2 M	R	15.0	3600	WE	0.75	4	H	14.0	2	As Ad	375	36
—	—	M	V	M	D	WW[10]	WW[10]		3.1	1900	2 M	R	10.0	3600	GE	50		A				520	20
—	—	M	D	M	H_2					2600	1 T	R											
—	—	M	E	T	S,D	G,O	G		1.0		2 T	S	7.5	3600	GE	35	1	A				525	22.5
—	—	T	S,D			O,G	O		17.7		1 M, 3 T	R										550	
—	—	M	D	M	D	TG(180)	O,G,WW		18.5		1 M, 2 T	S,R	10.0	3600	WE	75	1	A	3	2	Ad	350	10
—	—	M	D	[8]	D	O	O		18.4		4 M, 1 T	R	12.5	3600	GE	85	1	A				1282	40.5
—	—	M		M		SS(122)	WW				T											80	
—	E	M	D	M	H_2	BL	BL		6.75		4 M, 1 T	R	10.0	3600	GE	155	1	A				1282	40.5
—	—	MD	S,V	M	D	P,G,C	G		0.9		3 M, 3 T	R	6.0	3600	AC	1.25	1	A	6		Ag	795	12
—	—	M	V	M	D	O	O		19.0		2 M, 1 T	S,R	3.5	3600	EI	50.0		A				420	12.2
—	—	T	S,D	T	S,D	O,G[13]	O		18.6		2 T	S										460	
—	—	M	V	M	D	P,C	C		14.2	2200	1 M, 1 T	R	6[9]	3600	GE	115	0	A				640	19.2
—	—	M	D	M	D	SS(230)	L		7.2	2300	1 M, 1 T		6.6	3600	BB	50	1	A				230	12
—	—	T	S,V	T	S,D	SS(182)	HF,O				1 M, 1 T	R										200	
—	—					SS	C	[11]					3	3600		30	1	A				375	6
—	—	2 M	V	2 M	D	G	G		1.05^{14}		1 M, 1 T	R	1.5	3600	WE	30	1	A				60	1.5
—	—	T	V	T	D	G	G		1.03^{14}		1 M, 3 T	S										450	
—	—	M	D	M	D	SS(268)	O	WW	18.4		4 M, 1 T	R										1282	40.5
—	—	M	V	M	D								7.5	3600	GE		1	A	9.5	2	Ac	408	17
—	—	M	D	M	D	O,G	O															1800	40
—	—	M	D	M	D	P	C		12.9	2000	2 M											140	
—	E	M	V	M	D	P	C		12.5	2300	T	R	6.0	3600	WE	65	2	A	5.0	2	Ac	850	27
—	E	M	D	T	S	G, BL	BL		3.9		2 T	S										1051	
—	—	MT	D	M	D	O,G	C		18.5		2 M, 1 T	R	7.5	3600	Wo			A	8.0	2	A I B		
—	—	M	D	M	D	O	C		18.5		3 M, 1 T	S,R	11.5	3600	DL		4	A	6.5	1		375	39.5
—	—	M		M		SS	C		12.6		1 M, 1 T		4.0		EI	1.0	2						
—	—	T	S	T	S	G	G		1.0^{14}		1 M, 2 T	R										2350	35
—	—	T	S,D	T	S D	O G	G		1.06		1 M, 3 T	S										775	1.5
—	—	M	V	M	H_2	SS	C	HF			3 M, 2 T		12.5	3600	GE		1	A		1	Ac	700	23
—	E	M	D	M	H_2	BL	BL		4.2	1600	M	R	7.5	3600	WE	40		A				310	12.5
—	—	M	S	M	D	C	G		18.0		2 T	S	5.0	3600	WE			A				310	12.5
—	—	T	D			O,G	O		17.9		2 T	R										750	
—	—	M	V	M	D	O	O				1 T	R	7.5	3600	GE		2	A	7.5	2	Ag	700	23.5

Corp
Turbine Co
stokers

Tu – Tubular
UF – Underfeed stoker
UI – Union Iron Works
V – Vane control
Vo – Henry Vogt Machine Co
WE – Westinghouse Electric Corp
WH – Waste heat
Wi – Wickes Boiler Co

Wo – Worthington Corp
WW – Wood waste
(184) – Stoker grate area, sq ft

1 – Blast furnace gas
2 – Bark
3 – Coke oven gas
4 – Coke breeze
5 – British Thomson Houston
6 – Future oil and gas
7 – Steam heated
8 – Pressurized furnace
9 – Topping turbine, 25-cycle
10 – Magnesium bisulfite
11 – Sulphate liquor
12 – Furfural residue
13 – Waste by-product gas
14 – 1000 Btu per cu ft
15 – Future pulverized coal
16 – Waste gases from open hearths
17 – Floating power plant
18 – Hot water heating rated in M Btu
19 – When burning blast furnace gas
20 – Propane
21 – Tandem id and fd drives

fitutional Steam Plants, Above 250 PSI

Air heater	DUST COLLECTORS		F-D FANS		I-D FANS		Firing	FUEL			FEED PUMPS		TURBINES					Generator cooling	CONDENSERS			Total boiler capacity incl new units, 1000 lb	Total generator capacity incl new units, 1000 kw
	Mechanical	Electrostatic	Drive	Air volume control	Drive	Gas volume control		Type	Heating value, 1000 Btu per lb	Ash-fusion temperature, F	Drive	Flow control	Capacity, 1000 kw	Speed, rpm	Manufacturer	Backpressure, psia	No. bleed points		Surface, 1000 sq ft	No. water passes	Tube material		
Tu			M	V	M		P	C	11.0	2100	T	S,R	5.0	3600	GE	50	1	A				425	11.0
Tu								G			T	S	3.0	3600	WE	1.25	2	A	3.3	2	Ad	400	3.0
Tu	Me	E	M	V	M		P	C	12.5	2350	2T	S,R	6.0	3600	WE	200	0	A				1670	23.0
Tu			MT	V	MT		C	O	18.4		1M	R	6.0	3600	GE	50	2	A		2	Cu Ni	340	11.0
Tu	Me		M	V	M	D	SS×309	C,WW	11.6				5.0	3600	GE	43	2	A	6.0	2	Ac	320	14.0
Tu	Me		T	D	T	D	SS×266	C,O	13.5	2350	2M,1T	R	7.5	3600	WE	1.5	1	A	7.0	2	Ac	260	15.0
	Me		T	S,V	T	S,D	SS×215	C	12.9		1M,2T	R	7.5	3600	WE	1.5	1	A	7.0	2	Ac		
	Me		M	V	T	V	SS×150	WW	6.8		1M,1T	R	3.5	3600	GE	190	0	A				300	11.5
Tu	Me		M	V	T	V	G	G	1.0				7.0	3600	WE	1.5	1	A		2		450	7.0
			M	D	M	D	C	C	18.5		1M,1T	R	1.5		EI	125	1	A				200	4.5
Tu			M		M		BL	BL	3.4		1M											500	15.0
Tu	Me		M		M		C,HF	C			1M,1T		12.5	3000	BB	185		A				580	78.0
							C	G															
Tu	Me		M	D	M	D	BL	BL	9.4		1M,1T	R	6.0	3600	GE	50	1	A	12.0	2	Ag	300	17.5
			M	D	M	D	C	O	18.4		1M,1T	R	2.5	3600	WE	140	2	A				200	6.5
800 PSI																							
Tu	Me		MT	D	MT	D	C,O	C			3T	S										109	
Tu	Me			S,V	T	S,D	P,O	C	11.0		1M,1T	S,R										180	
Tu	Me		M	D,V	M	S,Hy	P,O	C	12.9	2000												1940	
	Me												7.5	3600	GE	1.25	2	A	5.0	2	Ad	477	15.0
			M	D	M	D	TG×360	An	11.5	2700	1T											320	2.5
			T	S	T	R	C,O	O	16.5		2T	R										260	
PI							SS×121	C					1.0	4950	Wo	30	0					65.6	2.2
	Me		M	V	M	D	SS×154	C,O	14.0	2200													
	Me		M	D	M	D	P,C	C			1T	S	6.0	3600	EI		1	A	4.5	2			
Tu			2M,1T	V	2M,1T	D	C	O	18.2		2M,1T	R	2.0	1200	Wo	5.0	1						
					T	V	O,G	G	0.9		1T	R										645	
			MT	D	M		UF×203	C	14.0	2400												209	
			M	D		D	TG×292	C	11.8	2100	3T	S,R										1400	48.0
					T	S	G,C	G			3T	S	0.6	6000	GE	20.0	1	A				284	1.5
													0.8	6000	GE	20.0	1	A					
	Me		M	V	M	V	SS×189	C	14.3	2550			3.0	3600	GE		1	A	3.3	3	Ag	200	4.0
			T	S	T	S	C,C	O	17.5		1M,1T	R										380	
			M	D	M	D	O,G	O			1M,1T	S,R	4.0	3600	GE	1.0	1	A	5.3	2	Ac	60	4.0
			M	V	M	Hy	TG×185	C	12.5	2200	1M,1T	R										210	1.0
	Me						SS×165															165	0.7
			T	D	T	D	G	G	1.05		1T	S										1075	
	Me		M	V	M	D	P	C	13.0		1M											280	2.3
Tu							P	C					10.0	3600	Wo	1.25	3	A				210	12.5
	Me,E		T	S,V	T	S,D	SS×231	C	12.5	2200	1M,2T	R										330	
			T				G	G														500	
			T	D	T	D	G	C	1.0		2T											50	
			M	V	T	S	C,C	G	0.5		1M,1T	R											
			M	SD	M	D	O,G	O	19.4		1M	R	7.5	3600	GE		3	A	7.0	2	Ac	165	11.0
			MT		MT		SS×152	C	11.1	2250	2M,1T	R											
	Me		M		M		TG×105	C	11.5	2200	1M,1T	R	0.6	4600	Wo	15		A				40	0.6
			T	V	T	D	O,G	G	18.4		1M,2T											150	
	Me		M	Hy	M	Hy	C	C	5.6	1800												729	10.0
							C	G														40	
							WW	WW															
	Me		M	S,V	M	S,D	P,C	C	12..	2200	2M	R										250	2.8
							P	C														340	
			T		T		G	G														165	
			MT	V	MT	D	O,G	O	16.0													200	
			M	V			O,G	O	18.5														
													2.5	3600	WE	1.25	3	A				315	3.5
					T		G	G	1.05		1M,1T	R										44	
	Me		T		MT		SS×202	C	18.5	2.00	1M,2T	R										300	
	Me		M	D	M	D	SS×151	C	12.2	2200	1M,1T	R										95	
							C	C															
	Me		MT		M		P,O,C	C			1M,2T	S,R										6000	330
											1M,1T	R											
			T		T		C	C	1.0		1M,3T											450	
					T		C	C	1.0		1M,2T											75	
											1M,1T	R										75	
			M	D			C	C	1.0		1M,1T	R										42	
	Me		M	V	M		P,WW	C	13.5	2250	T	S	0.8		Te	30						495	0.7
							SS×161	C					1.0	4950	Wo	30	0					125	1.0
							SS×76	C														450	
			T		T		C	C	1.0													375	
	Me		+21	S,V	+2		C	C	10.5	2050	1M,2T	S,R											
	Me		M	V	M		SS×202	C	13.5	2500	1M,1T	S										420	
			M	D	M	Hy	P,WW	C	13.5														
			T		M,1T	D	C	C	10.5			R											
							SS×161	C					0.5	4500	Wo	30	0					50	0.3
							SS×55	C															
			MT	V	MT	S,V		C	10.5		1M,2T	R							2.3	3	Al Br	120	

1955 Design Survey: Typical Hydroelectric

Compiled by F A Annett
Contributing Editor

Company or government agency	Designing or consulting engineers	Project name	[1]New or redeveloped	River	State or Province	Project started, date	[2]Dam, type	Crest length, ft.	Max. power, Mw.
NEW ENGLAND STATES									
Central Maine Power Co	Chas T Main, Inc Nebsco Services, Inc	Indian Pond	New	Kennebec	Me	1952	CG	600	100
Great Northern Paper Co	Stone & Webster Engrg Corp	Ripogenus	New	West Br Penobscot	Me	1951	CG	.....	—
Rumford Falls Power Co	Chas T Main, Inc	Lower Station	Red	Androscoggin	Me.	1953	.....	.....	—
White Mountain Power Co	Pierce Consulting & Engrg Co	Goodrich Falls	Red	Ellis	N H.	1952	CG	150	20
Green Mountain Power Co		Waterbury	New	.....	Vt.	1951	.....	.....	—
Electric Power, Inc	Chas T Main, Inc	Shepaug	New	Housatonic	Conn	1953	CG	1,412	120
MIDDLE ATLANTIC STATES									
Central Hudson Gas & Elec Corp	Chas T Main, Inc	Neversink	New	Neversink	N Y	1948	[5]Earth	2,800	200
Niagara Mohawk Power Corp		Stewart Bridge	Red	Sacandaga	N Y	1947	Earth	1,650	112
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Stark	New	Raquette	N.Y	1955	C&E	235	8
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Five Falls	New	Raquette	N Y	1953	C&E	500	50
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Rainbow Falls	New	Raquette	N Y	1954	C&E	600	75
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	South Colton	New	Raquette	N Y	1952	C&E	500	40
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Blake Falls	New	Raquette	N Y	1954	C&E	600	50
Rochester Gas & Electric Corp	Rochester G & E Corp, Louis S Bernstein	Station 26A	Red	Genesee	N.Y.	1951	SG	.....	—
Rockland Light & Power Co		Grahamsville	New		N Y	1952	Note 5	.....	—
EAST NORTH CENTRAL STATES									
U.S. Corps of Engineers	U.S. Corps of Engineers Erik Floor & Associates	St Mary's Falls	New	St Mary's	Mich.	1947	.....	.....	—
Wisconsin-Michigan Power Co	Mead & Hunt, Inc	Michigamme Falls	New	Michigamme	Mich.	1951	CG&EF	1,421	52
Wisconsin-Michigan Power Co	Mead & Hunt, Inc	Hemlock Falls	New	Michigamme	Mich	1951	CG&EF	.....	—
Wisconsin-Michigan Power Co	Mead & Hunt, Inc	Lower Paint Falls	New	Paint	Mich.	1951	CG&EF	616	25
Tomahawk Pulp Co		Tomahawk	Red.	.....	Wis	1951	.....	.....	—
Consolidated Water Pwr & Paper Co		Wisconsin Rapids	Red	.....	Wis.	1951	.....	.....	—
WEST NORTH CENTRAL STATES									
St Anthony Falls Water Power Co		Lower Dam	Red.	Mississippi	Minn.	1951	.....	.....	—
Union Electric Co of Missouri	Stone & Webster Engrg Corp	Bagnell Dam	New	Osage	Mo	1930	CG	2,543	148
U.S. Corps of Engineers	U.S. Corps of Engr, Chas T Main	Garrison	New	Missouri	N D	1945	EF	12,000	200
U.S. Corps of Engineers	U.S. Corps of Engineers	Oahe	New	Missouri	S D.	1948	EF	9,300	242
U.S. Corps of Engineers	U.S. Corps of Engr, Erik Floor & Assoc	Fort Randall	New	Missouri	S D.	1946	EF	10,500	150
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
SOUTH ATLANTIC STATES									
Washington Suburb Sanitary Dist		Hyattsville	New		Md.	1951	.....	.....	—
U S Corps of Engineers	U.S. Corps of Engineers Chas T Main, Inc	John H Kerr (was Buggs Island)	New	Roanoke	Va. & N.C.	1948	CG&EF	22,035	144
U S Corps of Engineers	U S Corps of Engineers	Philpott	New	Smith	Va.	1948	CG	892	220
Appalachian Electric Power Co	Am. Gas & Elec Service Corp	Niagara	Red.	Roanoke	Va.	1953	.....	.....	—
Nantahala Power & Light Co	Aluminum Co of America	Cedar Cliff	New	E Fork Tuckasegee	N.C.	1950	R&EF	579	117
Clifton Mfg Co		Converse	New	.....	N C.	1951	.....	.....	—
South Carolina Electric & Gas Co	Company engineering staff	Columbia	Red	Broad	S.C	1950	RFTC	1,000	14
U S Corps of Engineers	U.S. Corps of Engineers Chas T Main	Clark Hill	New	Savannah	S C & Ga.	1947	CG&EF	5,680	200
U S Corps of Engineers	U S Corps of Engineers Erik Floor & Associates	Buford	New	Chattahoochee	Ga.	1950	Earth	1,530	192
Georgia Power Co	Southern Services, S H Woodward	Furman Shoals	New	Oconee	Ga.	1950	CG&EF	2,732	102
Habersham Mills		Habersham	New		Ga.	1951	.....	.....	—
City of Augusta		Augusta	New		Ga	1951	.....	.....	—
U.S. Corps of Engineers	U S Corps of Engr, Erik Floor & Assoc	Jim Woodruff	New	Apalachicola	Fla.	1947	CG	6,134	105
EAST SOUTH CENTRAL STATES									
Alabama Power Co		Martin Dam	New	Tallapoosa	Ala.	1923	CG	1,277	168
Tennessee Valley Authority	Tennessee Valley Authority	Pickwick Landing	New	Tennessee	Tenn	1935	CG&EF	7,715	113
Tennessee Valley Authority	Tennessee Valley Authority (New extension only)	Hales Bar	New	Tennessee	Tenn	1905	CG	2,315	112
Tennessee Valley Authority	Tennessee Valley Authority	Boone	New	S Fork Holston	Tenn	1950	CG	1,330	140
Tennessee Valley Authority	Tennessee Valley Authority	Fontana	New	Little Tenn.	N C	1942	CG	2,365	435
Tennessee Valley Authority	Tennessee Valley Authority	Cherokee	New	Holston	Tenn.	1940	CG&EF	6,760	175
Tennessee Valley Authority	Tennessee Valley Authority	Ft Patrick Henry	New	S Fork Holston	Tenn.	1951	CG	740	95
Tennessee Valley Authority	Tennessee Valley Authority	Chatuge	New	Hiwassee	N C	1941	EF	2,850	144
Tennessee Valley Authority	Tennessee Valley Authority	Douglas	New	French Broad	Tenn	1942	CG&EF	1,705	202
Tennessee Valley Authority	Tennessee Valley Authority	Hiwassee	New	Hiawasee	N C.	1937	CG	1,265	306
						This unit also operates in reverse as a			
U S Corps of Engineers	U S Corps of Engr, Chas T Main	Dale Hollow	New	Obey	Tenn.	1942	CG	1,717	185
U S Corps of Engineers	U.S. Corps of Engineers Chas T Main, Inc	Wolf Creek	New	Cumberland	Ky	1942	CG&EF	5,736	240
U S Corps of Engineers	U S Corps of Engr, Amousen Engrg Corp	Old Hickory	New	Cumberland	Tenn.	1951	CG&EF	3,750	96
U S Corps of Engineers	U S Corps of Engineers	Cheatham	New	Cumberland	Tenn	1950	CG	495	75
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
U S Corps of Engineers	Harza Engineering Co	Blakely Mountain	New	Ouchita	Ark	1947	Earth	1,150	230
U S Corps of Engineers	U.S. Corps of Engineers Erik Floor & Associates	Bull Shoals	New	White	Ark	1947.	CG	2,256	284
U S Corps of Engineers	U S Corps of Engr, Fargo Engineering Co	Fort Gibson	New	Grand	Okla.	1946	CG&EF	2,850	131
U S Corps of Engineers	U S Corps of Engineers	Tenkiller Ferry	New	Illinois	Okla.	1948	Earth	3,000	197
Lower Colorado River Authority	Fargo Engineering Co	Granite Shoals	New	Colorado	Texas	1949	CG&EF	765	105
Lower Colorado River Authority	Fargo Engineering Co	Marble Falls	New	Colorado	Texas	1949	CG	820	80
U S Corps of Engineers	U S Corps of Engr, Amousen Engrg Corp	Whitney Dam	New	Brazos	Texas	1947	CG&EF	9,925	163
Int Boundry & Water Commission of United States and Mexico	R J Tipton, J L Burkholder, Walker Young & U S Bureau of Reclamation	[6] Falcon Dam	New	Rio Grande	Mexico Texas	1950	EF	26,264	150

[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 turbines, settings or generators, or a new plant.

[2]CA, concrete arch; CG, concrete gravity; C&E, concrete and earth; CG&EF, concrete gravity and earth fill; CSB, concrete sluiceway and bulkhead; CS&B, concrete slab and buttress; EF, earth fill; P&G, piers and gates; R&EF, rock and earth fill; RE, rested earth; RF, rock filled; RFCF, rock fill concrete face; RFTC, rock filled, timber crib; SC, sector gates.

[3]AC – Allis-Chalmers Mfg Co
BL – Baldwin-Lima-Hamilton Corp
BCL – Bepco Canada Ltd
CAC – Canadian Allis-Chalmers Ltd
CGE – Canadian General Electric
CVL – Canadian Vickers Ltd
CWC – Canadian Westinghouse Co
DEC – Dominion Engineering Co
EC – Elliott Co
EEC – English Electric Co of Canada
EM – Electric Machinery Mfg Co

Initial capacity, hp	Added capacity, no. of units	Added capacity, date	Ultimate capacity, hp	No. of units installed	Waterwheel capacity, hp	Waterwheel type	Speed, rpm	Static head, ft.	Design head, ft.	[2]Waterwheel manufacturer	[3]Governor manufacturer	Scroll case, concrete or steel	Penstock valve, type	Generator capacity, kva	Synchronizing, automatic or manual	[4]Thrust bearing, location	Design power factor	Kilovolts	Cycles	[5]Generator manufacturer
63 000			105 000	1	42 000	Francis	128 6	155	145	BL	W	Plate st	Head gt	33,333	Auto or man	BG	0 9	13 8	60	GE
				1	21,000	Francis	180	155	145	BL	W	Plate st	Head gt	16 677	Auto or man	BG	0 9	13 8	60	GE
				1	2,300	Francis	600	155	145	MS	W	Plate st	Head gt	1,750	Manual	AG	0 8	2 4	60	GE
30,220			45 330	2	15 110	Francis	266 7	186-155	165	MS	W	Plate st	Dow	13,500	Manual	AG	0 9	6 9	40	GE
18 000			27 000	2	9,000	Francis	180	80	77	AC	W	Plate st	Head gt	8,000	Auto or man	AG	0 80	11 5	60	AC
750			750	1	750	Francis	514	67	67	JL		Cast iron	Head gt	625	Automatic	HS	0 80	2 4	60	EM
7 700			7 700	1	7,700	Francis	327	140	136	JL		Plate st	Heat gt	6,900		AG	0 80	4 16	60	GE
57,000			57,000	1	57,000	Kaplan	138 5	99-72	96	AC	W	Concrete	Head gt	43,750	Auto or man	BG	0 80	11 5	60	AC
41,000			41 000	1	41,000	Francis	300	551-463	474	NN	W	Cast steel	Butterfly	36,250	Manual	AG	0 80	13 8	60	GE
42,500			42,500	1	42 500	Francis	106 9	100	97	BL	W	Concrete	Head gt	37,500	Manual	BG	0.80	13 8	60	GE
32 000			32,000	1	32,000	Francis	120	105	104	MS	W	Plate st	Head gt	25,000	Automatic	BG	0 90	11.5	60	GE
30 600			30,600	1	30 600	Francis	120	104	101	MS	W	Plate st	Head gt	25,000	Automatic	BG	0 90	11.5	60	GE
30 600			30,600	1	30,600	Francis	120	102	101	MS	W	Plate st	Head gt	25,000	Automatic	BG	0 90	11 50	60	GE
25 400			25 400	1	25 400	Francis	120	85	83	MS	W	Plate st	Head gt	21,500	Automatic	BG	0.90	11 5	60	AC
18 650			18 650	1	18 650	Francis	112 5	69	67	MS	W	Plate st	Head gt	16,000	Automatic	BG	0 90	6 9	60	AC
5,000			5,000	1	5,000	Kaplan	150	25	25	AC	W	Plate st	Head gt	4,500	Manual	AG	0 80	4 4	60	AC
28,000			28,000	1	28,000	Francis	327		330	NN	W	Plate st	Pivot	20,000		AG	0 90	13 8	60	WE
23,975	1	1953	72,750	3	6 975	Propeller	80	23-18	21	AC	W	Concrete	Head gt	5,333	Manual	BG	0 90	13.8	60	GE
				1	3 000	Kaplan	128 5	23-18	21	MS	W	Concrete	Head gt	2,500	Manual	AG	0 90	4 16	60	GE
13,000			13,000	2	6,500	Francis	277	60	60	AC	W	Concrete	Head gt	5,333	Automatic	AG	0 90	4 8	60	AC
3,800			3,800	1	3 800	Kaplan	200	34	34	AC	W	Concrete	Head gt	3,111	Automatic	AG	0 90	4 16	60	AC
155			155	1	155	Francis	514	21	21	AC		Open Flume	Head gt	100	Induction generator			0 48	60	AC
420			420	1	420	Francis	225	23	23	JL		Concrete	Head gt	Connects to existing Westinghouse generator						
286			286	2	143	Francis	143	8	8	JL		Open flume	Head gt	Connects to existing generator						
11,680			11,680	10	1,168	Francis	225	24	24	JL		Concrete	Head gt	875	Manual	AG	0.80	0.80	60	EM
287,050	2	1953	274,050	6	33,500	Francis	112.5	94	90	AC	AC	Plate st	Head gt	23,888	Manual	BG	0.80	13.8	60	WE
				2	3,025	Francis	327	94	90	AC	AC	Plate st	Head gt	3,000	Manual	AG	0.70	2 4	60	WE
				2	33,500	Francis	112 5	90	90	AC	AC	Plate st	Head gt	23 888	Manual	BG	0 80	13 8	60	WE
440,000			440,000	5	88,000	Francis	90	187-100	150	BL	W	Plate st	Head gt	84,210	Manual	BG	0 95	13.8	60	GE
194,000			485,000	5	97,000	Francis	94 7	210-130	170			Plate st	Head gt	70,000	Manual	BG	0.95	13 8	60	
440,000			460,000	8	57,500	Francis	85 7	145-76	112	AC	W	Plate st	Head gt	42,105	Manual	BG	0.95	13.8	60	WE
162,000			162,000	3	54,000	Kaplan	75	66-40	48	BL		Concrete	Head gt	35,100	Manual	BG	0.95	13.8	60	GE
6,750			6,750	3	2,250	Francis	900	123	123	JL		Plate st	Head gt	Drives pumps						
290,200	3	1953	290,200	6	45,000	Francis	85 7	108-60	90	NN	W	Plate st	Head gt	35,555	Manual	BG	0 90	13.8	60	WE
				1	17,000	Francis	138.5	108-60	90	BL	W	Plate st	Head gt	13,333	Manual	BG	0 90	13.8	60	WE
				2	1,600	Francis	450	108-60	90	JL	W	Service unit	Head gt	1,250	Manual	AG	0.80	0.48	60	WE
19,660			19,660	2	9,400	Francis	257	176-108	152	JL	W	Plate st	Head gt	7,500	Manual	AG	0.90	13.8	60	GE
				1	860	Francis	720	176-108	152	JL	W	Service unit	Head gt	750	Manual	AG	0.80	0.48	60	GE
4,400			4,400	2	2,200	Francis	277	60	60	JL	W	Plate st	Head gt	1,500	Automatic	AG	0.80	2 4	60	EC
9,400			9,400	1	9,400	Francis	360	172-168	170	MS	W	Plate st	Head gt	7,500	Automatic	AG	0 85	6.6	60	EM
770			770	1	770	Propeller	277	38	38	JL		Concrete	Head gt	625	Manual	AG	0.80	0.6	60	WE
3,000			3,000	2	1,500	Francis	164	36-27	35	JL	W	Plate st	Head gt	1,525	Manual	HS	0 80	4.8	60	WE
388,600	3	1953	388,600	7	55,000	Francis	100	150-111	135	NN	AC	Plate st	Head gt	44,444	Manual	BG	0.90	13.8	60	GE
				2	1,800	Francis	600	150-111	135	JL	W	Plate st	Head gt	1,250	Manual	AG	0.80	0.48	60	GE
118,400			118,400	2	55,000	Francis	100	170-104	136	NN		Plate st	Head gt	44 444	Manual	BG	0.90	13.8	60	WE
				1	8,400	Francis	277	170-104	136	JL		Plate st	Head gt	6,667	Manual	AG	0 90	13.8	60	WE
60,000			60,000	2	30,000	Francis	105.9	92-72	85	MS	W	Concrete	Head gt	25,000	Manual	BG	0.80	6.9	60	GE
550			550	1	550	Francis	257	26	26	JL		Concrete	Head gt	500	Manual	AG	0.80	2.3	60	WE
1,550			1,550	1	1,550	Francis	225	30	30	JL		Concrete	Head gt	Drives a pump						
42,800			42,000	3	14,000	Terry	75	32-14	26	NN	W	Concrete	Head gt	11,111	Manual	BG	0.90	13.8	60	WE
135,800	1	1952	213,000	3	45,000	Francis	120	146-86	145	1M, 2AC	W	Plate st	Head gt	37,500	Manual	AG	0.88	12.0	60	GE
				1	78,000	Francis	112.5	146-86	145	MS	W	Plate st	Head gt	60,000	Manual	BG	0.80	12.0	60	GE
96,800	2	1951	302,000	4	48,000	Kaplan	81.8	63-29	47	AC	AC	Concrete	Head gt	40,000	Manual	BG	0 90	13.8	60	WE
	2	1952		2	55,000	Kaplan	81.8	63-29	47	AC	AC	Concrete	Head gt	40,000	Manual	BG	0 90	13.8	60	WE
				8	7,700	Francis	112.5	37.5	37.5	MS	..	Plate st	Head gt	6,500	Automatic	AG	1.00	6.6	60	GE
84,800	2	1952	140 000	2	4,200	Francis	112.5	37 5	37.5	MS	..	Plate st	Head gt	3,750	Automatic	AG	0.80	6.6	60	GE
				4	4,100	Francis	100	37.5	37.5	MS	..	Plate st	Head gt	3,133	Automatic	AG	0.80	6.6	60	GE
				2	34,000	Kaplan	69.2	37.5	37.5	MS	W	Concrete	Head gt	27,000	Manual	AG	0.90	13.8	60	GE
108,500			103,500	3	34,500	Francis	100	124-36	90	NN	W	Concrete	Head gt	31,250	Manual	BG	0.80	13.8	60	WE
288,800	1	1952	274,500	3	91,500	Francis	150	429-244	330	AC	AC	Plate st	Head gt	75,000	Manual	BG	0 90	13.8	60	WE
88,800	1	1952	166 000	4	41 500	Francis	100	149-55	100	MS	W	Plate st	Head gt	33,333	Manual	BG	0.90	13.8	60	GE
80,000			50,000	2	25,000	Kaplan	138.5	75-56	61	NN	W	Concrete	Head gt	20,000	Auto or man	BG	0.90	13.8	60	WE
13,800			13,800	1	13,800	Francis	180	123-55	100	JL	W	Plate st	.....	11.111	Auto or man.	BG	0.90	6.9	60	WE
120,500	1	1954	159,500	2	41,500	Francis	94 7	129-47	100	MS	W	Concrete	Head gt	33,330	Manual	BG	0 90	13 8	60	GE
				3	35,500	Francis	90	95-47	80	MS	W	Concrete	Head gt	28,888	Manual	BG	0 90	13 8	60	GE
80,800	1	1955	160,000	1	80,000	Francis	120	195	190	NN	W	Plate st	Head gt	64,000	Manual	BG	0 90	13.8	60	WE
6, 2900-cfs 205-ft-head pump				1	80,000	Francis	105 9	195	190	AC		Plate st	Head gt	70,000	Manual	BG	0.90	13.8	60	AC
88,800	1	1953	75,000	3	25 000	Francis	163 6	154 118	140	MS	W	Plate st	Head gt	20,000	Manual	BG	0.90	13.8	60	WE
307,800	3	1953	377,000	6	62,500	Francis	105 9	214-111	160	BL	W	Plate st	Head gt	50,000	Manual	BG	0 90	13 8	60	GE
				1	2,000	Francis	600	214 111	160	JL	W	Service unit	.....	1,500	Manual	AG	0.80	0 48	60	EC
188,800			180,000	4	45,000	Kaplan	75	60-25	45	BL		Concrete	Head gt	31,250	Manual	BG	0.80	13.8	60	GE
60,800			60,000	3	20,000	Kaplan	60	32	32	NN		Concrete	Head gt	13,333	Manual	BG	0.90	13.8	60	WE
272,800			272 000	4	68 000	Francis	128.6	228-134	190		..	Plate st	Head gt	42,105	Manual	BG	0 95	13.8	60	
104,000			104,000	2	52,000	Francis	120	196-135	168	MS	W	Plate st	Butterfly	41,667	Manual	BG	0 90	13 8	60	WE
331,800	2	1953	419,000	4	52,000	Francis	128 6	239-132	190	AC	W	Plate st	Head gt	42,100	Manual	BG	0.95	0 48	60	AC
				2	1,500	Francis	600	239-132	190	JL	W	Service unit	Head gt	1,250	Manual	AG	0 80	0 48	60	GE
96,000			96,000	4	16 000	Francis	100	90-56	59	BL	W	Concrete	Head gt	12,500	Manual	BG	0.90	13.8	60	AC
47,000			94,000	2	23,500	Francis	150	181-104	132	MS	W	Plate st	Butterfly	17,895	Automatic	BG	0 95	13.8	60	EC
66,000			66,000	2	33,000	Francis	100	83	83	BL	W	Plate st	Head gt	25,000	Auto or man	BG	0 80	13.8	60	GE
42,000			42,000	2	21,000	Propeller	120	57	57	MS	W	Concrete	Head gt	16 666	Auto or man	BG	0.90	6.9	60	WE
41,400			41 400	2	20,700	Francis	128 6	126-78	92	NN	W	Plate st	Head gt	16,667	Manual	BG	0.90	13.8	60	AC
118,000			118,000	6	14 750	Francis	164	124-66	100	AC	W	Plate st	Head gt & Butterfly	11,667	Auto & man.	AG	0.90	6.9	60	GE

[illegible] – General Electric Co
[illegible] – Ideal Electric & Mfg Co
[illegible] – I P Morris
[illegible] – James Leffel & Co
[illegible] – John Inglis Co Ltd
[illegible] – Kaplan of Sweden
[illegible] – S Morgan Smith Co

MSC – S Morgan Smith Canada Ltd
NEC – Northern Electric Co Ltd
NN – Newport News Shipbuilding & Dry Dock Co
OC – Oerlikon, Canada Ltd
PW – Pelton Water Wheel Co
VEA – Vancouver Engineering Works Ltd

W – Woodward Governor Co
WE – Westinghouse Electric Corp

[4]AG – indicates that thrust bearing is above generator, BG, thrust bearing is below generator rotor, HS, horizontal-shaft machine.

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

[6]Two power plants are being built, one in Mexico and one in the United States with three 14,750-hp units in each.

[7]Vertical-shaft six-nozzle type.

1950 Design Survey: Typical Hydroelectric Plan

Compiled by F A Annett
Contributing Editor

Company or government agency	Designing or consulting engineers	Project name	[1]New or redeveloped	River	State or Province	Project started, date	[2]Dam, type	Crest length, ft.	Max. height, ft.	Max. capacity, cu. yd.	Installed capacity, kw.
MOUNTAIN STATES											
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Pole Hill	New	Colo. Big Thompson	Colo.	1950	.....	.....	—		47,500
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Flatiron	New	Colo. Big Thomoson	Colo.	1951	.....	.....	—		38,000
						This unit is operated in reverse as a					
Spring City Corp		Spring City	New		Utah	1951					3,000
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Boysen	New	Big Horn	Wyo.	1947	EF	1,000	150		15,000
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Alcova	New	North Platte	Wyo.	1951	EF	763	265		40,000
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Hungry Horse	New	So. Fork Flathead	Mont.	1948	CA	2,100	564		285,000
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Canyon Ferry	New	Missouri	Mont.	1949	CG	1,000	220		50,000
Montana Power Co	Ebasco Services, Inc	Kerr	New	Flathead	Mont.	1930	CA	385	205		168,750
U. S. Corps of Engineers	Sverdrup & Parcel, Inc	Albeni Falls	New	Pend Oreille	Idaho	1951	CG	755	83		42,000
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Palisades	New	Snake	Idaho	1952	EF	2,200	200		176,000
Washington Water Power Co	Ebasco Services, Inc	Cabinet Gorge	New	Clark Fork	Idaho	1951	CA	320	170		300,000
PACIFIC COAST STATES											
U. S. Corps of Engineers	U. S. Corps of Engineers	Chief Joseph	New	Columbia	Wash.	1949	CG	2,315	235		1,000,000
U. S. Corps of Engineers	U. S. Corps of Engineers	McNary	New	Columbia	Wash.	1947	CG&EF	8,000	157		1,360,000
U. S. Corps of Engineers	U. S. Corps of Engineers	Dalles	New	Columbia	Wash. & Ore.	1951	CG	.....	.....		1,000,000
PUD No. 1, Chelan County	Stone & Webster Engrg Corp	Rock Island	New	Columbia	Wash.	1930	CG	1,080	120		90,000
						1951					
PUD No. 1, Pend Oreille County	Harza Engineering Co	Box Canyon	New	Pend Oreille	Wash.	1952	SG	200	185		90,000
City of Seattle, Dept. of Ltg	Dr J. L Savage	Ross Dam	New	Skagit	Wash.	1937	CA	1,300	540		300,000
City of Tacoma, Lighting Div	Lighting Div Engrg staff	Cushman No. 2	New	Skokomish	Wash.	.....	.....	.....	.....		75,000
Pacific Power & Light Co	Ebasco Services, Inc	Yale	New	Lewis	Wash.	1951	EF	1,500	323		240,000
Portland General Electric Co	Portland General Electric Co	Station M	Red.	Clackamas	Ore.	1909	.....	410	96		28,725
Portland General Electric Co	J C Stevens, Portland Gen Elec	T W Sullivan	Red.	Willamette	Ore.	1952	CG	4,900	55		.....
California Oregon Power Co	Pioneer Service & Engrg Co	Fish Creek	New	Fish Creek	Ore.	1951	RFTC	215	31		54,400
California Oregon Power Co	Pioneer Service & Engrg Co	Lemota No. 1	New	North Umpqua	Ore.	1953	RFCF	885	120		60,000
California Oregon Power Co	Pioneer Service & Engrg Co	Lemota No. 2	New	North Umpqua	Ore.	1953	CS&B	195	25		46,000
California Oregon Power Co	Pioneer Service & Engrg Co	Clearwater No. 1	New	Clearwater	Ore.	1951	EF	384	30		21,000
California Oregon Power Co	Pioneer Service & Engrg Co	Clearwater No. 2	New	Clearwater	Ore.	1951	RFTC	157	26		36,000
U. S. Corps of Engineers	U. S. Corps of Engineers	Detroit	New	North Santiam	Ore.	1949	CG	1,526	450		100,000
U. S. Corps of Engineers	U. S. Corps of Engrs; Stevens & Thompson Engrs.	Lookout Point	New	Middle Fork Willamette	Ore.	1949	CG&EF	4,740	254		52,500
U. S. Corps of Engineers	U. S. Corps of Engineers	Big Cliff	New	North Santiam	Ore.	1951	CG	295	172		25,500
U. S. Corps of Engineers	U. S. Corps of Engineers	Dexter	New	Middle Fork Willamette	Ore.	1953	EF	2,835	80		30,000
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Bear River	Red.	Bear	Calif.	1950	RF	960	235		72,500
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Murphys	Red.	N Fork Stanislaus	Calif.	1953	.....	.....	—		1,300
U. S. Corps of Engineers	U. S. Bureau of Reclamation	Folsom	New	American	Calif.	1947	CG&EF	10,230	340		222,500
U. S. Bureau of Reclamation	U. S. Engineer Corps										
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Nimbus	New	American	Calif.	1952	CG	813	50		14,000
Imperial Irrigation District	Gibbs & Hill, Inc	Drop No. 2	New	All American Canal	Calif.	1952	...	.....	—		15,000
U. S. Possessions											
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Eklutna	New	Lake Eklutna	Alaska	1951	EF	.....	—		30,000
Kekaha Sugar Co		Kauai			Hawaii	1951	.....	.....	—		1,500
Puerto Rico Water Resources Auth	Jackson & Moreland	Caonillas No. 2	New	Arecibo	P. R.	1950	CG	235	85		5,400
CANADA					Province						
Anglo-Newfoundland Dev Co		Bishop Falls	Red.	Exploits	N.F.	1952	.....	.....	—		24,000
Newfoundland Lt & Pr Co	Montreal Engineering Co	Horse Chops	New	Horse Chops	N.F.	1951	EF	2,000	35		18,000
Newfoundland Lt & Pr Co	Montreal Engineering Co	Cape Broyle	New	Horse Chops	N.F.	1950	EF	730	37		7,500
Iron Ore Co of Canada	.....	Menihek Lake	New	.....	Lab. N.F.	1952	.....	.....	—		12,000
Avon River Power Co	Montreal Engineering Co	White Rock	Red.	Gaspereau	N.S.	1951	CG	.....	.....		6,000
Nova Scotia Light & Power Co	Montreal Engrg Co; N.S. Light & Pwr Co	Nictaux	New	Nictaux	N.S.	1952	RE	1,100	90		9,000
Nova Scotia Power Commission	K E Whitman	Gulch	New	Bear	N.S.	1950	EF	730	54		4,500
Maine & New Brunswick Elec Pwr Co	Stone & Webster Engrg Corp, E C Wilson	Tinker	Red.	Aroostook	N.B.	1951	.....	.....	—		11,000
New Brunswick Elec Power Comm	Power Corp of Canada	Tobique	New	Tobique	N.B.	1950	CG	350	80		17,000
Quebec Hydro-Electric Comm	H G Acres & Co	Beauharnois No. 2	New	St Lawrence	Que.	1948	P&G	4,500	31		300,000
Quebec Hydro-Electric Comm	H G Acres & Co, Frazer Brace Engrg	Rapids No. 2	New	Ottawa	Que.	1951	CG	1,026	110		82,000
Aluminum Company of Canada	Shawinigan Engineering Co	Perrobonka No. 1	New	Perrobonka	Que.	1950	CG	1,990	120		250,000
Aluminum Company of Canada	Shawinigan Engineering Co	Perrobonka No. 2	New	Perrobonka	Que.	1951	CG	3,000	130		280,000
Manicouagan Power Co	H G Acres & Co	McCormick Dam	New	Manicouagan	Que.	1951	CG	4,575	95		56,000
Gulf Power Co	Stadler, Hurter & Co	Marguerite	New	Marguerite	Que.	1951	CG	450	120		25,000
Lake Megantic Municipal Corp		Graynurst	New	Chaudiere	Que.	1952	.....	.....	.....		4,500
Price Bros & Co Ltd	Montreal Engineering Co	Jim Gray	New	Shipshaw	Que.	1951	Earth	1,000	145		78,000
Price Bros & Co Ltd	Montreal Engineering Co	Brochet	New	Shipshaw	Que.	1951	Earth	1,325	72		9,000
Quaker Oats Co		Peterborough			Ont.	1952	.....	.....	—		2,000
Hydro-Elec Power Comm of Ont	Hydro-Elect Power Comm of Ont	Sir Adam Beck-Niagara No. 2	New	Niagara	Ont.	1950	.....	.....	—		1,360,000
Hydro-Elec Power Comm of Ont	Hydro-Elect Power Comm of Ont	Otto Holden	New	Ottawa	Ont. & Que	1948	CSB	2,500	136		384,000
Hydro-Elec Power Comm of Ont	Hydro-Elect Power Comm of Ont	Pine Portage	New	Nipigon	Ont.	1947	CG	3,000	150		92,000
Great Lakes Power Co	Harza Engineering Co	Scott Falls	New	Michipicoten	Ont.	1950	C&E	980	90		28,000
Great Lakes Power Co	Harza Engineering Co	Moon Creek	New	Michipicoten	Ont.	1951	C&E	520	78		15,000
Manitoba Hydro-Electric Board	H G Acres & Co	McArthur Falls	New	Winnipeg	Man.	1952	CG&EF	31,000	100		180,000
Manitoba Hydro-Electric Board	H G Acres & Co, Dr T H Hogg	Pine Falls	New	Winnipeg	Man	1948	CG	910	73		154,000
Sherritt Gordon Mines, Ltd	H G Acres & Co	Laurie River	New	Laurie	Man.	1951	CG	820	110		7,000
Northwest Territories Power Comm	Montreal Engineering Co	Mayo River	New	Yukon	Yukon	1951	RE	400	64		3,000
Calgary Power Co	Montreal Engineering Co	Bearspaw	New	Bow	Alta.	1953	CG&EF	1,200	.....		21,600
Calgary Power Co	Montreal Engineering Co	Ghost Extension	New	Bow	Alta.	1952	.....	.....	—		37,450
Aluminum Company of Canada	B C International Engrg Co	Kemano	New	Necnako	B.C.	1951	RF	1,550	317		600,000
British Columbia Electric Co	B C International Engrg Co British Columbia Electric Co Cowin, Rhodes & Wooster	Wahleach Lake	Red.	Wahleach Lake	B.C.	1950	EF	1,400	55		92,000
British Columbia Electric Co	Shawinigan Engrg Co B C Electric Co	Bridge River	New	Bridge	B C.	1946	EF	1,000	.....		360,000
Cons Mining & Smelting Co of Canada	Stone & Webster Canadian Ltd	Waneta	New	Pend Oreille	B.C	1951	CG	950	250		300,000
British Columbia Power Comm	H G Acres & Co	John Hart	New	Campbell	B C	1945	CG	2,900	140		54,000
British Columbia Power Comm	B C Power Commission	Clowmom Falls	New	Clowmom	B C.	1950	CG	160	70		4,000
Alaska Pine & Cellulose, Ltd		Port Alice	New		B.C.	1952	.....	.....	—		3,200

[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 turbines, settings or generators, or a new plant.

[2]CA concrete arch; CG concrete gravity; C&E, concrete and earth; CG&EF concrete gravity and earth fill; CSB, concrete sluiceway and bulkhead; CS&B, concrete slab and buttress; EF earth fill; P&G piers and gates; R&EF, rock and earth fill; RE, rolled earth; RF, rock filled; RFCF, rock fill, concrete face; RFTC, rock filled, timber crib; SC, sector gates.

AC – Allis-Chalmers Mfg Co
BL – Baldwin-Lima-Hamilton Corp
BCL – Bepco Canada Ltd
CAC – Canadian Allis-Chalmers Ltd
CGE – Canadian General Electric
CVL – Canadian Vickers Ltd
CWC – Canadian Westinghouse Co
DEC – Dominion Engineering Co
EC – Elliott Co
EEC – English Electric Co of Canada
EM – Electric Machinery Mfg Co

– General Electric
– Ideal Electric
– I P Morris
– James Leffel
– John Inglis
– KMW of Sweden

Initial capacity, hp	Added 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	[3]Waterwheel manufacturer	[3]Governor manufacturer	Scroll case, concrete or steel	Penstock-valve, type	Generator capacity, kva	Synchronizing, automatic or manual	[4]Thrust-bearing location	Design power factor	Kilovolts	Cycles	[3]Generator manufacturer
47,500			47,500	1	47,500	Francis	450	840-825	815	PW	W	Cast st	Head gt	35,000	Automatic	AG	0.95	13.8	60	EC
102,000			105,000	{2	48,000	Francis	514	1118-1078	1045	PW	W	Cast st	Butterfly	35,000	Auto or man	AG	0.90	13.8	60	WE
300-rpm	370-cfs 240-ft-head pump →			{3	12,000	Francis	257		290	AC		Plate st	Butterfly	8,500	Manual	AG	1.00	13.8	60	AC
450			450	1	450	Impulse	600		460	PW	W									
21,000			21,000	2	10,500	Francis	180	112-70	96	NN	W	Plate st		8,333	Manual	AG	0.90	6.9	60	WE
53,000			53,000	2	26,500	Francis	163.6	165-143	155	NN	W	Plate st	Butterfly	18,950	Manual	AG	0.95	6.9	60	EC
420,000	2	1953	420,000	4	105,000	Francis	180	485-262	400	AC	W	Welded pl st	Head gt	75,000	Manual	AG	1.00	13.8	60	GE
70,500			70,500	3	23,500	Francis	150	160-80	125	NN	W	Plate st	Head gt	16,667	Manual	AG	1.00	6.9	60	GE
231,000	1	1953	231,000	3	77,000	Francis	112.5	191	189	2 NN, 1 BL	W	Plate st	Head gt	56,000	Manual	BG	0.90	13.8	60	WE
58,800			58,800	3	19,600	Kaplan	54.5	33-8	22	BL	W	Concrete	Head gt	15,778	Manual	BG	0.90	13.8	60	GE
158,000			158,000	4	39,500	Francis	163.6	245-114	190	MS		Welded pl st	Butterfly	30,000	Manual	AG	0.95	11.5	60	
282,000	{2	1952	282,000	{3	70,500	Propeller	120	100-85	99	BL	W	Plate st	Head gt	55,555	Manual	BG	0.90	13.8	60	WE
	{2	1953		{1	70,500	Kaplan	120	100-85	99	BL	W	Plate st	Head gt	55,555	Manual	BG	0.90	13.8	60	WE
			2,700,000	10	100,000	Francis	100	183-148	165	NN	AC	Plate st	Head gt	67,368	Manual	BG	0.95	13.8	60	WE
2,000,000			2,226,000	{14	111,300	Kaplan	85.7	92-62	80	MS	AC	Concrete	Head gt	73,684	Manual	AG	0.95	13.8	60	GE
1,567,200				{2	4,500	Francis	277	92-62	80	PW	W	Concrete	Head gt	3,750	Manual	BG	0.80	4.16	60	EW
1,733,000			2,723,600	14	123,800	Kaplan	85.7	91-60	81	BL		Concrete	Head gt	82,105	Manual	AG	0.95	13.8	60	
84,000	{3	1952	288,000	{4	21,000	Propeller	100	51-20	32	AC	AC	Concrete	Head gt	16,667	Manual	BG	0.90	13.8	60	GE
	{3	1953		{6	34,000	Kaplan	100	51-20	45	AC	AC	Concrete	Head gt	25,000	Manual	BG	0.90	13.8	60	AC
98,000			122,500	4	24,500	Kaplan	100	46-20	41	AC	W	Concrete	Head gt	16,667	Manual	BG	0.90	13.8	60	EC
360,000	2	1953	480,000	3	120,000	Francis	150		355	BL		Welded pl st	Butterfly	100,000	Auto. or man	AG	0.90	13.8	60	WE
75,600	1	1952	112,500	4	37,500	Francis	300	484-450	440	AC	AC	Cast st	Butterfly	30,000	Manual	AG	0.90	12.6	60	AC
140,000			280,000	2	70,000	Francis	150	272-190	224	MS	W	Plate st	Head gt	60,000	Automatic	BG	0.90	13.8	60	GE
25,725	1	1952	32,550	1	6,825	Francis	300	85-80	81	MS	W	Plate st	Head gt	5,000	Manual	HS	1.00	11.00	60	GE
			20,600	12	1,600	Propeller	242	44-16	40	PW		Open flume	Head gt	1,200	Automatic	AG		4.16	60	WE
15,400			15,400	1	15,400	Impulse	400	1034	995	PW	PW		Butterfly	12,941	Automatic	HS	0.85	6.9	60	GE
40,000			40,000	1	40,000	Francis	400	756-745	710	AC	W	Welded pl st	Butterfly	30,527	Automatic	AG	0.95	11.5	60	WE
46,000			46,000	1	46,000	Francis	400	727-704	705	AC	W	Welded pl st	Butterfly	34,737	Automatic	AG	0.95	11.5	60	WE
21,000			21,000	1	21,000	Francis	514	661-620	634	MS	W	Welded pl st	Butterfly	17,647	Automatic	AG	0.85	7.2	60	WE
36,000			36,000	1	36,000	Francis	450	750-745	742	MS	W	Steel	Butterfly	30,588	Automatic	AG	0.95	11.5	60	GE
140,000			140,000	2	70,000	Francis	163.6	375-225	285	BL	W	Plate st	Head gt	55,555	Manual	AG	0.90	13.8	60	WE
157,500			157,500	3	52,500	Francis	128.5	233-126	185	PW	W	Plate st	Head gt	42,222	Manual	BG	0.90	13.8	60	GE
26,500			26,500	1	26,500	Francis	163.6	98-73	91	BL	W	Plate st	Head gt	20,000	Automatic	BG	0.90	13.8	60	WE
20,700			20,700	1	20,700	Kaplan	128.6	58-51	51	NN		Concrete	Head gt	15,000	Automatic	BG	1.00	13.8	60	GE
53,500	1	1953	53,500	1	40,000	Impulse	400	2009-1893	1960	PW	PW		Spherical	33,000	Manual	AG	0.90	13.8	60	GE
5,300			5,300	1	5,300	Impulse	400		690	PW	PW		Spherical	4,500	Automatic	AG	0.85	2.4	60	GE
222,000			222,000	3	74,000	Francis	163.6	340-145	300	NN		Plate st	Head gt	60,000	Manual	AG	0.90	13.8	60	WE
18,800			18,800	2	9,400	Kaplan	150	51-20	42	MS	PW	Concrete	Head gt	7,500	Manual	AG	0.90	4.16	60	EC
15,000			15,000	2	7,500	Kaplan	100	25.5	25.5	BL	W	Concrete	Head gt	6,500		BG	0.80	6.9	60	GE
98,000			50,000	2	25,000	Kaplan	600	870-780	800	NN	W	Cast st	Butterfly	16,667	Manual	AG	0.90	6.9	60	OC
1,500			1,500	1	1,500	Impulse	300		265	PW	W			1,250	Manual	AG	0.80	6.9	60	GE
5,400			5,400	1	5,400	Francis	400	205-175	190	JC	W	Welded pl st	Butterfly	5,000	Auto. or man	AG	0.80	4.16	60	WE
16,700			18,900	6	2,700	Francis	231	35	35	MSC				2,256	Manual	HS	0.90	6.9	50	CWC
10,000			10,000	1	10,000	Francis	450	290	276	DEC	W	Plate st	Butterfly	9,000	Automatic	AG	0.85	6.9	60	CGE
7,500			7,500	1	7,500	Francis	360	192-180	176	CVL	W	Plate st	Butterfly	7,000	Automatic	AG	0.85	6.9	60	CWC
12,000			12,000	2	6,000	Propeller	150	34	34	CAC		Concrete	Head gt	5,000	Manual	AG	0.85	6.9	60	CWC
4,000			4,000	1	4,000	Francis	200	65-60	60	CVL	W	Welded pl st	Head gt	4,000	Automatic	AG	0.80	6.9	60	CWC
9,000			9,000	1	9,000	Francis	600	405	382	DEC	W	Cast st	Butterfly	8,500	Automatic	AG	0.80	6.9	60	CWC
8,500			8,500	1	8,500	Francis	400	252-247	225	CVL	W	Pl steel	Butterfly	7,500	Manual	AG	0.80	13.8	60	CWC
14,000	1	1952	14,000	1	5,000	Francis	300	87-75	85	MSC	L	Pl steel	Head gt	4,400	Manual	AG	0.80	12.0	60	CWC
27,000			27,000	2	13,500	Kaplan	225	80-66	75	MSC	W	Pl steel	Head gt	12,500	Manual	AG	0.80	6.9	60	CGE
			Beauharnois No. 1 completed in 1949, has 758,000 hp installed in 14 – 53,000-hp and 2 – 8,000-hp units																	
318,000	2	1953	2,128,000	{6	53,000	Francis	75	82-75	80	CAC	W	Concrete	Head gt	51,000	Automatic	BG	0.80	13.8	60	CWC
				{6	53,000	Francis	75	82-75	80	DEC	W	Concrete	Head gt	51,000	Automatic	AG	0.80	13.8	60	CGE
64,000			64,000	2	16,000	Francis	120	69-64	68	DEC	W	Concrete	Head gt	15,000	Manual	BG	0.85	6.9	60	CWC
275,000			275,000	5	55,000	Francis	105.9	115-95	113	CAC	W	Concrete	Head gt	53,500	Manual	BG	0.70	13.8	60	CWC
285,000			285,000	5	57,000	Francis	105.9	115-95	115	DEC	W	Concrete	Head gt	53,500	Manual	AG	0.70	13.8	60	CGE
337,200			337,200	2	56,200	Francis	112.5	128-116	124	MSC	W	Welded pl st	Head gt	37,500	Automatic	AG	0.95	13.8	60	CGE
26,000			26,000	2	13,000	Francis	200	122-70	100	CAC	W	Plate st	Butterfly	11,000	Manual	AG	0.80	13.8	60	CGE
4,500			4,500	2	2,250	Francis	300	64	64	DEC		Plate st	Head gt	2,000	Manual	BG	0.80	2.3	60	NEC
70,000			70,000	2	35,000	Francis	277	338	338	CAC	W	Plate st	Butterfly	30,000	Automatic	AG	0.95	13.80	60	CWC
9,000			9,000	1	9,000	Propeller	180	46	46	CAC	W	Concrete	Head gt	7,500	Automatic	AG	0.85	6.9	60	CGE
2,300			2,300	1	2,300	Francis	150		27	CVL		Concrete	Head gt							CWC
1,200,000			1,200,000	12	100,000	Francis	150	305-294	292	DEC	W	Plate st	Head gt	{80,000	Automatic	AG	0.95	13.8	60	6 CGE
														{80,500	Automatic	BG	0.95	13.8	60	6 CWC
264,000			264,000	{4	33,000	Francis	94.7	82-72	77	CAC	W	Concrete	Head gt	27,000	Automatic	BG	0.9[illegible]	13.8	60	CWC
				{4	33,000	Francis	94.7	82-72	77	JIC	W	Concrete	Head gt	27,000	Automatic	BG	0.9[illegible]	13.8	60	CWC
164,000			164,000	{2	41,000	Francis	109.1	110-100	105	CAC	W	Plate st	Head gt	33,000	Manual	AG	0.9[illegible]	13.8	60	CWC
	1	1953		{1	45,000	Francis	109.1	110-100	105	MSC	W	Plate st	Head gt	38,000	Manual	BG	0.90	13.8	60	CWC
20,000			20,000	2	10,000	Kaplan	225	78-61	70	MSC	W	Plate st	Head gt	8,500	Manual	AG	0.80	12.5	60	CGE
15,000			15,000	2	7,500	Kaplan	200	51-47	48	MSC	W	Concrete	Head gt	5,000	Manual	AG	1.00	11.5	60	CGE
80,000			80,000	8	10,000	Propeller	85.7	23.5	23.5	DEC	W	Concrete	Head gt	8,500	Automatic	BG	0.90	6.9	60	CGE
114,000	5	1952	114,000	6	19,000	Propeller	94.7	37	37	DEC	W	Concrete	Head gt	15,500	Auto or man.	AG	0.90	13.6	60	CGE
7,000			7,000	2	3,500	Francis	300	55	55	CAC	W	Concrete	Head gt	2,750	Manual	AG	0.80	2.4	60	CGE
8,000			8,000	1	3,000	Francis	450	120-110	118	DEC	W	Plate st	Butterfly	3,000	Manual	AG	0.85	6.9	60	CGE
21,600			21,600	1	21,600	Kaplan	128.6	56-34	48	KMW	KMW	Concrete	Head gt	18,000	Automatic	BG	0.85	13.8	60	CWC
67,450			67,450	1	30,000	Francis	150	97-92	107	EEC	W	Plate st	Head gt	25,000	Automatic	BG	0.85	13.8	60	CWC
				{1	140,000	Vertical	327	2,570	2,500	DEC			Butterfly	106,000	Manual	AG	0.80	13.8	60	EEC
280,000			2,240,000	{1	140,000	4-nozzle	327	2,570	2,500	CAC			Butterfly	106,000	Manual	AG	0.80	13.8	60	CGE
				{1	140,000	Impulse	327	2,570	2,500	PW&VEW	PW		Butterfly	106,000	Manual	AG	0.80	13.8	60	CWC
82,000			82,000	1	82,000	Impulse	360	2,035	1,880	PW&VEW	PW	Cast st	Spherical	75,000	Automatic	AG	0.80	13.8	60	CGE
620,000			620,000	{3	62,000	[7]Impulse	300		1,130	PW&VEW	W	Cast st	Spherical	50,000	Manual	AG	0.90	13.8	60	CWC
	1	1954		{1	62,000	[7]Impulse	300		1,130	PW&VEW	PW	Cast st	Spherical	50,000	Manual	AG	0.90	13.8	60	CWC
480,000			480,000	2	120,000	Francis	120	219-172	210	DEC	W	Plate st	Head gt	90,000	Manual	BG	0.85	14.4	60	CWC
168,000	4	1950-53	168,000	6	28,000	Francis	327.3	480-394	390	DEC	W	Plate st	Butterfly	25,000	Manual	AG	0.80	13.8	60	CWC
12,000			12,000	2	2,000	Francis	600	170-120	160	PW&VEW	W	Cast st	Butterfly	1,875	Manual	AG	0.80	4.16	60	BCL
3,200			3,200	1	3,200	Francis	900		425	CVL		Cast st		2,500		HS	0.80	6.9	60	EC

General Electric Co.
Neal Electric & Mfg Co
T P Morris
James Leffel & Co
John Inglis Co Ltd
KMW of Sweden
S Morgan Smith Co

MSC – S Morgan Smith, Canada Ltd
NEC – Northern Electric Co Ltd
NN – Newport News Shipbuilding & Dry Dock Co
OC – Oerlikon Canada Ltd
PW – Pelton Water Wheel Co
VEW – Vancouver Engineering Works Ltd

W – Woodward Governor Co
WE – Westinghouse Electric Corp

[4]AG – indicates that thrust bearing is above generator, BG, thrust bearing is below generator rotor, HS, horizontal-shaft machine.

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

[6]Two power plants are being built, one in Mexico and one in the United States with three 14,750-hp units in each.

[7]Vertical-shaft six-nozzle type.

Government-Agency Hydroelectric Plan

(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	538,000	3,102,000	
	Hungry Horse	Mont.	So. Fork Flathead	420,000	420,000	210,000	210,000
PUD No. 1, Chelan County	Rock Island	Wash.	Columbia	288,000	84,000	84,000	204,000
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.	Mid Fk Willamette	157,500	157,500		157,500
	Detroit	Ore	North Santiam	140,000	140,000		140,000
	Dexter	Ore.	Mid Fk Willamette	20,700	20,700		20,700
	Chief Joseph	Wash.	Columbia	2,700,000	1,000,000		1,000,000
	Dalles	Ore. & Wash.	Columbia	2,723,600	1,733,200		1,733,200
	McNary Dam	Ore. & Wash.	Columbia	2,226,000	1,567,200		1,567,200
	Albeni Falls	Idaho	Pend Oreille	58,800	58,800		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	Idaho	Snake	26,500	9,000	19,500	
	Palisades	Idaho	Snake	158,000	158,300		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	
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	522,000	1,742,000	
	Elephant Butte	N. M.	Rio Grande	34,500	34,500	34,500	
	Green Mountain	Colo.	Blue	30,000	30,000	30,000	
	Estes Park	Colo.	Colo. Big Thompson	53,000	53,000	53,000	
	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	55,000	55,000	
	Boysen	Wyo.	Big Horn	21,000	21,000	21,000	
	Alcova	Wyo.	North Platte	53,000	53,000		53,000
	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 Pr & Irr Dist	Sutherland	Neb.	North Platte	35,000	35,000	35,000	
Loup River Public Power District	Columbus	Neb.	Loup	54,000	54,000	54,000	
Central Neb. Public Pwr & Irr Dist	Jeffery Canyon	Neb.	Platte	26,000	26,000	26,000	
	Johnson No. 1	Neb.	Platte	26,000	26,000	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		460,000
	Oahe	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	162,000		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.	Ouchita	104,000	104,000		104,000
	Bull Shoals	Ark.	White	419,000	211,000	211,000	
	Table Rock	Ark.	White	272,000	272,000		
	Narrows	Ark.	Little Missouri	36,000	24,000	24,000	
Grand River Dam Authority	Pensacola Dam	Okla.	Grand	120,750	80,750	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	
	Granite Shoals	Texas	Colorado	66,000	66,000	66,000	
	Marble Falls	Texas	Colorado	42,900	42,000	42,000	
Brazos River Conserv & Reclam Dist	Possum Kingdom	Texas	Brazos	51,000	34,000	34,000	
International Boundry & Water Comm	Falcon Dam	Texas & Mex.	Rio Grande	88,500	88,500		88,500
U. S. Corps of Engineers	Whitney Dam	Texas	Brazos	41,400	41,400		41,400
	Wolf Creek	Ky.	Cumberland	377,000	377,000	188,500	188,500
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	118,500	35,500
	South Holston	Tenn	South Holston	49,500	49,500	49,500	
	Ft Patrick Henry	Tenn	So. Fork Holston	50,000	50,000		50,000
	Boone	Tenn.	So. Fork Holston	103,500	103,500	103,500	
	Watauga	Tenn	Watauga	69,000	69,000	69,000	
	Fontana	N. C	Little Tennessee	274,500	183,000	274,500	
	Apalachia	Tenn	Hiwassee	106,000	106,000	106,000	
	Hiwassee	N. C	Hiwassee	160,000	80,000	80,000	80,000
	Nottely	Ga.	Nottely	22,000	22,000		22,000
	Ocoee No. 3	Tenn.	Ocoee	33,500	33,500	33,500	
	Ocoee No. 2	Tenn.	Ocoee	25,000	15,000	25,000	
U. S. Corps of Engineers	John H. Kerr	Va. N. C	Roanoke	290,000	290,000	145,000	145,000
	Center Hill	Tenn.	Carney Fork	188,750	188,750	188,750	
	Dale Hollow	Tenn	Obey	75,000	50,000	75,000	
	Old Hickory	Tenn	Cumberland	180,000	180,000		180,000
	Allatoona	Ga	Etowan	152,900	102,900	102,900	
	Buford	Ga.	Chattahoochee	118,400	118,400		118,000
	Jim Woodruff	Fla.	Chattahoochee	42,000	42,000		42,000
	Clark Hill	Ga. & S. C	Savannah	388,600	388,600	388,600	
S. Carolina Public Service Authority	Santee-Cooper	S. C	Santee	215,720	173,000	175,720	
Greenwood County Board of Comm	Buzzards	S. C	Saluda	30,000	22,200	22,200	
Total Capacity				26,561,625	15,633,900	13,256,700	8,263,030

NOTE: Because of space limits 15 plants of 20,000-hp capacity and below, totalling 190,000-hp, have been omitted