TABLE 1. UNIT STEAM CONSUMPTION OF PROCESS EQUIPMENT[a]

KITCHEN APPLIANCES (EXCLUSIVE OF WATER HEATING)	CONSUMPTION,[b] LB PER HR	PRESSURE, PSIG
Stock and vegetable kettles (per 5 gal)	20.0	7-20
Vegetable steamers (per compartment)	40.0	7-20
Steam tables (per sq ft)	1.7	7-20
Bain-Maries (per sq ft)	3.4	7-20
Coffee urns (per gal)	3.4	7-20
Water urns (per gal)	5.0	7-20
Soup warmers (30 × 30 × 28 in.)	100.0	7-20
Egg boilers (3 compartments)	18.0	7-20
Clam, lobster, and potato steamers (per compartment)	40.0	7-20
Oyster pots	18.0	7-20
Plate and cup warmers (per 20 cu ft)	35.0	7-20
Food-warming ovens (per 20 cu ft)	35.0	7-20
Silver burnisher and washers	69.0	7-20
Dishwashers (per tray)	60.0	7-20
LAUNDRY EQUIPMENT		
Tumblers		
40 × 94 in.	360	100
30 × 36 in.	225	100
Washers, (per gal water heated)	1	15-100
Flatwork ironers,		
100 to 120 in. chest type (per roll)	60	100
50 to 100 in. cylinder type (per machine)	60-120	100
Standard presses	105	100
Large shirt body presses	190	100
Cuff and neckband presses	15	100
Sleevers	12	100
Steam-electric irons	8	100
Woolen pressing machines		
Large—electric vacuum	25	65
Small—electric vacuum	12	65
Large—steam vacuum	35	65
Small—steam vacuum	20	65
Feather cleaning and sterilizing		
15 pillows per hr	175	100
HOSPITAL EQUIPMENT		
Sterilizers, for bottles or pasteurisation (per bottle)	1	40
Sterilizers, for water, (per gal)	12	40
Sterilizers, for instruments and utensils,		
8 × 9 × 18 in.; water depth 3½ in.	27	40
9 × 10 × 20 in., water depth 3½ in.	30	40
10 × 12 × 22 in., water depth 4 in.	39	40
12 × 16 × 24 in., water depth 4 in.	60	40
10 × 12 × 36 in., water depth 4 in.	66	40
16 × 15 × 20 in., water depth 10 in.	92	40
20 × 20 × 24 in., water depth 24 in.	144	40
Sterilizers, for instruments @ 240-250 F,		
12 × 20 in.	45	40
14 × 22 in.	60	40
16 × 24 in.	72	40

TABLE 1. UNIT STEAM CONSUMPTION OF PROCESS EQUIPMENT (CONCLUDED).

HOSPITAL EQUIPMENT (CONTINUED)	CONSUMPTION, LB PER HR	PRESSURE, PSIG
Sterilizers, for surgical supplies		
10 × 20 in.	10	40
12 × 20 in.	22	40
14 × 22 in.	28	40
16 × 24 in.	38	40
16 × 36 in.	54	40
20 × 28 in.	60	40
20 × 36 in.	78	40
20 × 48 in.	98	40
20 × 60 in.	124	40
Sterilizers, (autoclave) (240-250 F)		
15.5 × 24 in.	24	40
17.5 × 26 in.	32	40
21.5 × 30 in.	40	40
24 × 36 in.	42	40
Disinfector, mattress		
30 × 42 × 84 in.	42	35-60
60 × 66 × 108 in.	318	35-60
Blanket warmers		
18 × 24 × 72 in.	4	35-60

[a] From *District Heating Handbook* (*National District Heating Association*, Third Edition, 1951).
[b] These values represent approximate requirements after warm-up period.

load factor for space heating is usually between 15 and 30 percent. For space heating plus additional steam requirements such as water heating, cooking, or laundry, it is between 15 and 40 percent. Where process requirements predominate, as in factories, load factors are sometimes 50 percent or more. Load factors for various types of buildings are given in Table 9, Chapter 18.

2. *Duration of plant output.* The cumulative number of hours for the various plant send-outs and the predicted peak boiler demand on the coldest day are used in conjunction to determine the number and sizes of boilers, in order to effect most efficient loading of individual units and the plant as a whole. The cumulative number of hours a typical district heating plant will send out steam at various plant outputs, with outputs expressed in percentage of maximum hourly rate, is given in Table 3. It will be noted that the duration of plant output for the higher send-outs is very low.

3. *Feed-water treatment.* Good feed-water treatment is an absolute necessity in a plant in order to be able to operate the boilers at maximum outputs. Dirty tubes will limit boiler capacity. Proper feed-water treatment will prevent corrosion and scale formation and keep boiler outage to a minimum.

4. *Smoke abatement.* This is a modern requirement. The installation of suitable

TABLE 2. ANNUAL STEAM CONSUMPTION FOR WATER HEATING FOR VARIOUS TYPES OF BUILDINGS, PER CU FT OF VOLUME[a] [b]

TYPE OF BUILDING	CONSUMPTION, LB/(YR)(CU FT)	CONSUMPTION LB/(YR) (CU FT)(100 F DEG TEMP. RISE OF WATER)
Hotel	3.20	2.66
Residence Club	2.56	2.11
Apartment House	2.41	1.99
Department Store	0.95	0.79
Office	0.85	0.71
Theatre	0.57	0.48
Parking Garage	0.46	0.38

[a] Based on analysis by fourteen district heating companies from metered consumptions. Building volume is approximate gross volume.
[b] From *District Heating Handbook* (*National District Heating Association*, Third Edition, 1951, p. 347).