

Formulas Used for Utility Computations1. Electricity

Lighting - Usage factors for energy and demand calculations from Table 2-3 of Utilities Target Manual NavFac Mo-303 May 1972 (Energy area column)

Air Conditioning - 1.4 KW per hr. per ton (500 SF=1 ton) 4 mo. per yr. June-Sept. (6 mo. used in excepted bldgs.)  
Source: Energy Consumption at Shore activities

2. Water - 65 gal. per person for 24 hr. day, 7 days/week, Admin. usage - 8 hrs/5 days wk, 1/4 of daily total.  
 $7 \text{ days} \div 5 \text{ days} = 1.4 \text{ days} \times 65 \text{ gal.} = 91 \text{ gal.} \div 4 (1/4) = 22.75 \text{ or } 23 \text{ gal. per person per day. Hot water} = 3 \text{ gal. per person per day.}$   
Source: NavFac Mo-303 May 1972 (Utilities Target Manual)

3. Steam - Cu. ft. (SF x 10' ceiling) x 3000 Degree Days (average this area 3-4 years) x factor on BTU's per CF per Degree Days in Plus 25° column, Table 4-3  $\div$  12 months = BTU's per mo. (drop 3 digits to change to lbs. of steam) Source: NavFac Mo-303

4. Water Heating - elect - 1 KWH heats 4 gal. water  
Source: Comparison data fr. CP & L  
Water Heating - steam - 1 lb steam heats 1.17 gal. water  
Source: Comparison data fr. CP & L

5. Fuel Oil - for 1000 SF  $\frac{75,000 \text{ BTU cap.} \times .5 \text{ operating level}}{136,000 \text{ BUT's per gal. oil} \times .60 \text{ effeciency}}$  (half wide open) = .46 gal. per hr. per 1000 SF  
Source: Engineering estimate

1/4 customers @ service stations, snack bars, barber and beauty shops use bathroom fac. @ 5 gal. each  
10 gal. water per wk. cleanup = 40 gal. mo. @ offices, stores, etc. (half cleanup water is hot)  
10 gal. water per day cleanup @ beauty & barber shops  
20 gal. water per wk. cleanup @ theater snack bars  
→ 50 gal. water per day cleanup @ snack bars, restaurants, etc.  
10 gal. per day for coffee & jet spray @ snack bars  
> 1 gal. per customer @ barber shops  
3 gal. per customer @ beauty shops  
30 gal. per day cleanup @ gas stations

*10 week per clean up*

*1500 is 36,452 SF*

