EXISTING BUILDING LOAD AND COST ANALYSIS

By using Trane Trance 700, a building energy modeling software, the heating and cooling loads were calculated for the HSS River Building. In *Techanical Assignment 2 – Building and Plant Energy Analysis Report,* a detailed analysis was done by inputting many interior loads such as human, receptacle, and lighting loads and schedules. With all the inputs and with equipment specifications, an estimated heating and cooling load for the whole building was calculated. This estimated load is then compared with the design load compiled from the project's equipment schedules. **Table 5** compares the calculated load from *Techanical Assignment 2 – Building and Plant Energy Analysis Report*and the designed loads from Cannon Design.

Table 5 – Building Heating and Cooling Load Comparison		
	Computed	Designed
Cooling Load	360 ft2/Ton	415 ft2/Ton
Heating Load	423 ft2/Ton	372 ft2/Ton
Supply Air	0.91 cfm/ft2	1.1 cfm/ft2
Ventilation Supply	0.15 cfm/ft2	0.15 cfm/ft2

The utility provider for the HSS River building is Consolidated Edison Company (Con Ed). The Hospital for Special Surgery has a contract with Con Ed for a utility rate, which is not available for the public. Through Con Edison's website, an estimated on peak demand, on peak consumption, and steam prices are as follows:

- Demand charge – June to September: $15.58/kW
- Demand charge – October to May: $12.04/kW
- Consumption rate: $0.20/kWhr
- Steam – All year: $2.08/therm

By using the Con Edison rates, the annual energy cost can be calculated. **Table 6 shows** the energy break down for the HSS River Building, the HVAC equipments use 38% of the total energy while most of it goes to receptacle loads (50%). **Table 7** shows the total annual energy cost along with the cost per square footage.

Table 6 - Energy Breakdown		
5.5% Heating	147,554 kWh	$86,279
6.8 % Cooling Compressors	174,665 kWh	$106,672
16.1% Fans	870,979 kWh	$252,562
9.4% Pumps	237,145 kWh	$147,459
47% HVAC	**1,430,343 kWh**	**$592,972**
51.7% Receptacle	1,308,240 kWh	$811,024
10.5% Lighting	265,618 kWh	$164,715
53% Non HVAC	**1,573,858 kWh**	**$975,738**