

## GreenSpaces-Energy Use Comparison

### Electrical End-use Totals (kWh/Yr) Baseline

S.no	Alternative	Lights	Equipment	HVAC	Total
1	Typical Building	11,955,350	10,448,170	32,585,113	54,988,620

### Energy Conservation Measures (ECMs)

S.no	ECM	Lights	Equipment	HVAC	Total	% savings Over Typical Building
1	Shading	11,955,350	10,448,170	30,522,087	52,925,600	3.8%
2	High Performance Roof	11,955,350	10,448,170	32,239,866	54,643,380	0.6%
3	High Performance Wall	11,955,350	10,448,170	31,115,288	53,518,800	2.7%
4	Proposed Glazing	11,955,350	10,448,170	29,464,235	51,867,750	5.7%
5	Reduced Lighting Power	5,493,303	10,448,170	30,545,506	46,486,970	15.5%
6	Occupancy Sensors	10,897,190	10,448,170	32,154,755	53,500,120	2.7%
7	Daylight sensors	10,511,340	10,448,170	31,928,820	52,888,320	3.8%
8	UFAD – Underfloor air distribution system (VAV)	11,955,350	10,448,170	16,376,457	38,779,980	29.5%
9	UFAD + 25 C T set point	11,955,350	10,448,170	15,993,007	38,396,520	30.2%
10	UFAD + 26 C T set point	11,955,350	10,448,170	15,329,546	37,733,070	31.4%
11	UFAD + Cooling Tower VFD 5 C Approach	11,955,350	10,448,170	15,686,463	38,089,980	30.7%
12	UFAD + Energy Recovery	11,955,350	10,448,170	14,184,932	36,588,450	33.5%
13	UFAD + Airside Economizer	11,955,350	10,448,170	15,311,277	37,714,800	31.4%
14	UFAD + High COP Chillers	11,955,350	10,448,170	13,519,159	35,922,680	34.7%
15	Combined ECMs case 25 C T set point	4,845,896	3,743,084	5,785,378	14,374,360	73.9%
16	Combined ECMs case 26 C T set point	4,845,896	3,743,084	5,507,870	14,096,850	74.4%

The equipment usage covers the office equipment etc. The data centre usage is not included.

A few ECMs like geothermal cooling, solar hot water, thermal energy storage, solar PVs etc are yet to be modeled. More information is required.

#### Assumptions for Typical Building

230 mm normal brick wall, normal roof, Single glazing-clear 6 mm, No shades or light shelves, Lighting @ 1.5 w/sqft overall except MLCP (0.5 w/sqft), No lighting controls, Equipment @ 3 w/sqft (vs 1w/sqft for combined ECMs case building, Constant air volume overhead distribution system, Centrifugal Chiller-COP of 5.0, Primary secondary pumping, cooling tower with constant speed fan