



## ■ MECHANICAL ANALYSIS

The change in the lighting system alters the amount of heating and cooling needed in the building. The following is a calculation to determine the amount of savings in CFM. A power density of 2 W/SF was assumed to calculate the difference in the two systems.

Space	Area	Standard PD	New PD	Standard Watts	New Watts	3.412	Standard BTU/h	New BTU/h	1.08 * T	Existing CFM	New CFM
Corridor	816.7	2	0.8	1633.4	653.36	3.412	5573.1608	2229.26432	21.6	258.0167037	103.2066815
Bathroom	157.5	2	1.4	315	220.5	3.412	1074.78	752.346	21.6	49.75833333	34.83083333
Crit Space	1370	2	1.3	2740	1781	3.412	9348.88	6076.772	21.6	432.8185185	281.332037
Lobby	460	2	1.7	920	782	3.412	3139.04	2668.184	21.6	145.3259259	123.527037
Studios	6072	2	1.2	12144	7286.4	3.412	41435.328	24861.1968	21.6	1918.302222	1150.981333

TOTAL	2804.221704	1693.877922
SAVINGS		1110.343781



Space	Area	Standard PD	New PD	Standard Watts	New Watts	3.412	Standard BTU/h	New BTU/h	1.08 * T	Existing CFM	New CFM
Fire Pump	490	2	1	980	490	3.412	3343.76	1671.88	21.6	154.8037037	77.40185185
Boiler Room	858	2	0.8	1716	686.4	3.412	5854.992	2341.9968	21.6	271.0644444	108.4257778
Storage	496	2	0.8	992	396.8	3.412	3384.704	1353.8816	21.6	156.6992593	62.6797037
Main Elec Room	245	2	0.8	490	196	3.412	1671.88	668.752	21.6	77.40185185	30.96074074
Hallway	650	2	0.6	1300	390	3.412	4435.6	1330.68	21.6	205.3518519	61.60555556
Emer Elec Room	245	2	1.8	490	441	3.412	1671.88	1504.692	21.6	77.40185185	69.66166667
Telecom	245	2	1.8	490	441	3.412	1671.88	1504.692	21.6	77.40185185	69.66166667
Pub office	248	2	0.7	496	173.6	3.412	1692.352	592.3232	21.6	78.34962963	27.42237037
Compressor Room	245	2	1.1	490	269.5	3.412	1671.88	919.534	21.6	77.40185185	42.57101852
Locker room	245	2	1.8	490	441	3.412	1671.88	1504.692	21.6	77.40185185	69.66166667
Shower A	34	2	1.3	68	44.2	3.412	232.016	150.8104	21.6	10.74148148	6.981962963
Shower B	34	2	1.5	68	51	3.412	232.016	174.012	21.6	10.74148148	8.056111111
Storage	735	2	0.5	1470	367.5	3.412	5015.64	1253.91	21.6	232.2055556	58.05138889
Adv. Media	688	2	1.3	1376	894.4	3.412	4694.912	3051.6928	21.6	217.357037	141.2820741
Storage	490	2	1.2	980	588	3.412	3343.76	2006.256	21.6	154.8037037	92.88222222
Server Room	122.6	2	1.3	245.2	159.38	3.412	836.6224	543.80456	21.6	38.73251852	25.17613704
Computer Lab	898.5	2	1.3	1797	1168.05	3.412	6131.364	3985.3866	21.6	283.8594444	184.5086389
Com Lab Staff	718.8	2	1.2	1437.6	862.56	3.412	4905.0912	2943.05472	21.6	227.0875556	136.2525333
Elevator Machine	245.2	2	1.9	490.4	465.88	3.412	1673.2448	1589.58256	21.6	77.46503704	73.59178519
Lobby	681	2	0.7	1362	476.7	3.412	4647.144	1626.5004	21.6	215.1455556	75.30094444
restroom	222	2	1.1	444	244.2	3.412	1514.928	833.2104	21.6	70.13555556	38.57455556
Restroom	222	2	1.4	444	310.8	3.412	1514.928	1060.4496	21.6	70.13555556	49.09488889
Janitor Closet	34	2	1.1	68	37.4	3.412	232.016	127.6088	21.6	10.74148148	5.907814815
Hallway	354	2	0.9	708	318.6	3.412	2415.696	1087.0632	21.6	111.8377778	50.327
Laser Cutting Lab	496	2	1.1	992	545.6	3.412	3384.704	1861.5872	21.6	156.6992593	86.18459259

TOTAL	3140.967148	1652.224669
SAVINGS		1488.74248

## ■ MECHANICAL ANALYSIS

Space	Area	Standard PD	New PD	Standard Watts	New Watts	3.412	Standard BTU/h	New BTU/h	1.08 * T	Existing CFM	New CFM
Dean Office	370	2	1.1	740	407	3.412	2524.88	1388.684	21.6	116.8925926	64.29092593
Metal Shop	600	2	1.6	1200	960	3.412	4094.4	3275.52	21.6	189.5555556	151.6444444
Storage	804	2	0.8	1608	643.2	3.412	5486.496	2194.5984	21.6	254.0044444	101.6017778
Recyc Closet	130	2	1.9	260	247	3.412	887.12	842.764	21.6	41.07037037	39.01685185
Storage 2	170	2	1.4	340	238	3.412	1160.08	812.056	21.6	53.70740741	37.59518519
Recep/Hallway	891	2	1.1	1782	980.1	3.412	6080.184	3344.1012	21.6	281.49	154.8195
Assoc Dean	160	2	1.5	320	240	3.412	1091.84	818.88	21.6	50.54814815	37.91111111
Labs	1330	2	1.3	2660	1729	3.412	9075.92	5899.348	21.6	420.1814815	273.117963
Assoc Dean	163.9	2	1.5	327.8	245.85	3.412	1118.4536	838.8402	21.6	51.78025926	38.83519444
Undergrad chair	163.1	2	1.5	326.2	244.65	3.412	1112.9944	834.7458	21.6	51.52751852	38.64563889
Wood Shop	1440.8	2	1.7	2881.6	2449.36	3.412	9832.0192	8357.21632	21.6	455.1860741	386.908163
Register	248	2	1.9	496	471.2	3.412	1692.352	1607.7344	21.6	78.34962963	74.43214815
Admin Workshop	145.5	2	1.7	291	247.35	3.412	992.892	843.9582	21.6	45.96722222	39.07213889
Mailroom	48	2	2.6	96	124.8	3.412	327.552	425.8176	21.6	15.16444444	19.71377778
Storage	45	2	2.7	90	121.5	3.412	307.08	414.558	21.6	14.21666667	19.1925
Teaching Lab	1053.8	2	1.4	2107.6	1475.32	3.412	7191.1312	5033.79184	21.6	332.9227407	233.0459185
Business Office	163	2	1.5	326	244.5	3.412	1112.312	834.234	21.6	51.49592593	38.62194444
Faculty Conference	522	2	1.8	1044	939.6	3.412	3562.128	3205.9152	21.6	164.9133333	148.422
Shop Staff	286	2	1.7	572	486.2	3.412	1951.664	1658.9144	21.6	90.35481481	76.80159259
Lobby	807	2	0.9	1614	726.3	3.412	5506.968	2478.1356	21.6	254.9522222	114.7285
Vestibule	124	2	1.1	248	136.4	3.412	846.176	465.3968	21.6	39.17481481	21.54614815
Toilet	158	2	1.4	316	221.2	3.412	1078.192	754.7344	21.6	49.9162963	34.94140741
Janitor Closet	31	2	1.1	62	34.1	3.412	211.544	116.3492	21.6	9.793703704	5.386537037
Hallway	875	2	0.7	1750	612.5	3.412	5971	2089.85	21.6	276.4351852	96.75231481

TOTAL	3389.600852	2247.043683
SAVINGS		1142.557169

The totals savings in the building is 3741 CFM. This amount of savings does not warrant a downsizing in mechanical equipment.