

The primary objective of this project’s electrical effort was to determine approximate equipment loads to better understand and size the electrical distribution necessary to support the lab equipment for a future phased renovation of the main lab areas. The electrical loads for the main lab areas were analyzed by department to determine an estimated connected and demand load for each department, as seen in the Table 1 below. With a desire to have 25% of the equipment loads served from normal power, 25% served from a UPS system with a minimum of 60 minutes of run time, and 50% served from generator distribution, the total equipment loads were broken up by distribution type, as seen in Table 2 below.

Table 1 – Estimated Loads by Department

Department	Estimated Connected Load (kVA)	Estimated Demand Load (kVA)
Chemistry	46.4	44.2
Cytology	2.6	2.6
Hematology	31.1	21.7
Immunology	12.4	12.4
Microbiology	28.0	22.4
Molecular	48.6	30.7
Mycology	5.7	5.7
Pathology	12.5	12.5
POC Testing	1.6	1.6
Send-Out	1.6	1.6
Total	190.5	155.4
15% Spare Capacity	28.6	23.3
Grand Total	219.1	178.7

Notes

- 1)The estimated demand is based on NEC Table 220.44 for equipment that is indicated to be 120V NEMA 5-15/20 cord and plug equipment.
- 2)The 15% spare capacity number is included as an allowance for general use lab receptacles not dedicated to specific equipment and for unknown future equipment loads.
- 3)Loads indicated are for lab equipment only and do not include HVAC, lighting, and other ancillary loads.

Table 2 – Estimated Loads by Distribution Type

Distribution Type	Estimated Connected Load (kVA)	Estimated Demand Load (kVA)
Normal	54.8	44.7
Generator	109.6	89.4
UPS	54.8	44.7

Based on these totals, it is estimated that a minimum 16'x20' electrical room will be required to house the following electrical distribution equipment required to serve the lab equipment.

- 480V/150A enclosed circuit breaker, 75kVA transformer, and associated panelboards to serve the equipment on normal power.
- 480V/250A enclosed circuit breaker, 112.5kVA transformer, and associated panelboards to serve the equipment on generator power.
- 70kVA UPS system, with integral maintenance bypass and battery cabinets to provide and estimated run time of 75 minutes at full load, and associated panelboards.

It should be noted that the estimated minimum electrical room size and distribution equipment does not include electrical distribution that may be required to serve HVAC equipment, lighting, and other ancillary loads within the lab areas.