



APPENDIX B: Guidelines on the Use of Energy Efficient Lighting

1. Periodic Evaluation and Data Management. Periodic evaluation and the proper data management of existing lighting systems shall be conducted prior the phase out of old lighting systems to establish baseline data. The following data shall be gathered:
 - Type of space/area (e.g. classroom, conference room, etc.)
 - Type of lighting fixture
 - Number of lighting fixtures
 - Wattage per fixture
2. This will also help in establishing the illumination requirements as well as if there is a need to replace/upgrade lighting fixtures and wiring systems and switches. Illuminares and reflectors shall be used to help increase illumination.
3. The Mechanical and Electrical Works Office (MEWO) and the Campus Sustainability Office shall jointly conduct the evaluation and audit of the different lighting systems. Specifically, they shall look into the following areas of concern:
 - Determine need for Upgrading/Retrofitting of existing lighting fixtures (i.e. replacement of worn out fixtures, installation of illuminaires, retrofitting of receptacles/holders, rewiring etc.)
 - Documentation and Evaluation of Existing Room Illumination

Illumination. Lighting illumination standards shall also be used as a reference in the upgrading and replacement of current existing lighting systems. This takes in consideration the nature of activities or tasks being performed in illuminated spaces.

Illumination Standards¹:

Nature of Activity/Task	Minimum & Maximum Levels (Lux)	Applications
Lighting for Infrequently used areas	50 – 150	Circulation areas and corridors (e.g. hallways, lobby's, outdoor areas)
	100 – 200	Stairways
	100 – 200	Elevators
	100 – 200	Roadways and Parking Areas
Lighting for working interiors	200 – 300	Infrequent reading and writing (e.g. Dining areas, faculty lounges)
	300 – 750	Classrooms, Computer labs, and Offices
	300 – 750	Conf. Rooms
	500 – 1000	Deep-plan General Offices (e.g. Institutional Artist's Room)
	500 – 1000	Science labs, Arts and Technology/TVET labs
Localized Lighting for Exacting Tasks	500 – 1000	Proofreading (e.g. student publication offices, STATCOM office etc.)
	750 – 1500	Designing, Architecture and Machine Engineering (e.g. engineering labs)
	1000 – 2000	Detailed and Precise Work

4. **Phase-out and Upgrading.** Phase-out of old lighting systems shall be done through two approaches. The first approach will involve the replacement of all bulbs and tubes by batches as part of the LED upgrading per building facility. The second approach shall be done on a per need basis as part of the preventive maintenance/day-to-day operations of the university. In the second approach, as bulbs and tubes get busted and require replacement, alternative LED lighting shall be used to

¹ Reference: DOE Guidelines on Energy Conserving Design of Buildings, 2008



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replace the conventional lighting. On some occasions, there might be a need to do some minor retrofitting and adjustments in the lighting fixture.

Day-to-Day Replacements: AY 2015-2016 Onwards

Lighting Systems	Recommended Replacement
CFLs (E27; vertical/side mount)	LED bulbs (E27; vertical/side mount)
CFLs (G24; vertical/side mount)	LED bulbs (G24; vertical/side mount); retrofitting needed
Circular Fluorescent Lamps	LED bulbs (E27); retrofitting needed or LED Fluorescent tubes; retrofitting needed
PAR 38 Bulbs	LED PAR 38 Bulbs
Pin Lights (MR16)	LED Pin lights (MR16)

- 5. Compliance to Government Regulations and the DLSP MCS Principles and Standards.** The Campus Sustainability Office, in close coordination with the Risk Management, Compliance and Audit Office (RMCA) as well as the University's Pollution Control Officer shall ensure that the university complies with all government regulations and policies related to the disposal of electronic waste as well as promote the principles and standards of the DLSP Modern Conduct of Schools Manuals.
- 6. Future Development and Use of Energy Efficient Lighting.** Consideration for the environment will always be given importance especially in future construction and development of the university. Compliance to environmental laws and regulations shall be given utmost priority in the implementation of construction and other infrastructure developments. Low-Carbon, "Green Building" designs will be pursued in order to ensure that future renovations and construction of new buildings utilize available lighting as well as employ energy efficient lighting such as LEDs. Cost-benefit studies will be undertaken to look into the viability of such projects.