UCT COMMUNICATION ON LOADSHEDDING

Please note: The information below represents a provisional plan designed to assist staff and students to continue working where possible during power outages. We invite feedback and suggestions to help the University of Cape Town deal with this reality. If you have any suggestions, please email loadshedding@uct.ac.za.

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1. Introduction

Loadshedding is a reality and is dependent on national demand impacting us both on campus and at home. It is therefore imperative that we all do our part by conserving electricity and switching off all non-essential appliances both in our private residences and on campus. With loadshedding expected to continue indefinitely, each of us will need to adapt to new ways of working despite the disruptions we are faced with.

Loadshedding can occur at any time, and it is imperative from a safety perspective to ensure that all electrical appliances or switches at plug points be turned off once not in use. This will help prevent fire or electrical hazards from occurring once the power is restored.

Below are some guidelines that could prepare us for teaching, learning, and working during load shedding at UCT.

2. What to do in an emergency:

a) If you are stuck inside a lift or building

Please avoid using lifts just before planned load shedding.

UCT has more than 100 lifts across all its campuses.
Some lifts with more modern technology will ground in the event of loadshedding to the nearest floor with doors left open in the event of a power outage. UCT has a programme in place to replace all lifts with older mechanisms over the next ten years. Safety notices are available on the inside of lifts listing emergency contact numbers and emergency push buttons for the activation during an emergency that will directly connect you to Maintenance and Operations.
If you are stuck in a lift or should you experience a failure of any access control system in your building during or after load shedding, please phone CPS on 021 650 2222/3 or 080 650 2222/3.

b) If you are a person with a disability / limited mobility

Be mindful of the loadshedding schedule and plan ahead as much as possible to prevent being stranded on a floor or in a room that may be challenging to access during load shedding. Please reach out to the Disability Service disabilityservice@uct.ac.za and/or Campus Protection Services at 080 650 2222/3 for assistance during loadshedding.

Please note: Generators may require as much as 60 seconds to power up. If a generator fails to power up, please log a maintenance call on (021) 650 4321/2 or 021 350 4500.

c) If the Public Address (PA) system is not operational

In the event of an emergency, during extended load shedding where alarm sirens may fail to sound, evacuation marshals are advised to use loud hailers and occupants should follow the instructions of health and safety officials.

3. Stay Informed

- UCT's Upper, Middle and Lower Campuses, all residences and the Health Science Campus in Groote Schuur are in Area 15. Click here to see the campus loadshedding schedule.
- Hiddingh Campus and the Graduate School of Business are in Area 7, so they fall on different load shedding schedules. Click here for the City of Cape Town's schedule.
- For your convenience upload the EskomSePush App on https://esp.info/.

4. ICT services available during loadshedding?

- The computer of a lectern is connected to a network cable that may not necessarily be connected to back - up power.

Wifi Connectivity

- Wi-Fi will not work during a power outage, unless connected to the localized power back-up supply.
- If supporting networking equipment loses power, the Wi-Fi (along with wired connections) will no longer be operational.

5. Back-up power generation capacity at UCT

a) Centrally Bookable Venues

To see which venues have power back-up facilities, including Wi-Fi, in Centrally Bookable Venues please use following link https://ictsapps.uct.ac.za/classroom/ (Use the check boxes on the left-hand side to filter backup power configurations).

Please note:

- In certain cases whilst Wi Fi may be working, the network point at the podium for lecterns may not be functional during loadshedding. Under these conditions it would be advisable that academic staff bring their laptop to connect to the lectern.
- HVAC systems are not operational during loadshedding.

b) Data Centres

The following table provides an overview of the redundant power that is currently in place that will allow for all services to function during loadshedding.

Building, Location or Venue	Coverage	Back-up Type
Bremner Data Centre	HVAC, UPS, Core Switches and Servers	Generator (150kVA) plus UPS Bridge
Computer Data Centre	HVAC, UPS, Core Switches and Servers	Generator (200 kVA) plus UPS Bridge
ICTS on Main, Mowbray	Emergency lights and plugs	Generator (200 kVA)

c) Library Services

UCT Libraries function in a highly connected environment. If you have a functional device with access to the internet (working on or off campus), you can still access the following services. Mobile device users can also use their mobile data (provided by their cellular network) to access these services via the library website www.lib.uct.ac.za that includes:

- Primo Library Catalogue
- Online resources including databases, eJournals, eBooks, ZivaHub, OpenUCT
- Ask-a-Librarian
- Book-a-seat
- Leganto

Please see the following information on which services will be available during loadshedding.
Access to study spaces will depend largely on the availability of natural light.

Summer (daylight until 19h00):								
Library	**24/7 Space**	**Study space**	**Computers**	**Printing, Photocopying, Scanning**	**Reference Service**	**Loans Desk**	**Short Loans**	**Inter- library Loans**
Chancellor Oppenheimer Library (Central Library)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Health Sciences Library	No	Yes limited to natural light	No	No	Limited	Yes	Yes	Yes
Law Library	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Hiddingh Hall Library	No	Yes, until 17h00	No	No	Limited	Yes	Yes	N/A
Music Library	N/A	Yes limited to natural light	No	No	Limited	Yes	Yes	Yes
ICH Library	N/A	Yes, until 15h00	Yes	Yes	Yes	Yes	Yes	N/A
Built Environment Library	N/A	Yes, until 17h00	No	No	Limited	Yes	Yes	N/A
Bolus Herbarium Library	N/A	When open and depending on natural light	No	No	Limited	Yes	Yes	N/A
Library Learning Lounge (Snape Building)	N/A	Yes, until 16h00	No	No	No	No	No	N/A

Winter (daylight until 17h00):								
Library	**24/7 Space**	**Study space**	**Computers**	**Printing , Photo copying, Scanning**	**Reference Service**	**Loans Desk**	**Short Loans**	**Inter- library Loans**
Chancellor Oppenheimer Library (Central Library)	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Health Sciences Library	**No**	**Yes, limited to natural light**	**No**	**No**	**Limited**	**Yes**	**Yes**	**Yes**
Law Library	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**N/A**
Hiddingh Hall Library	**No**	**Yes, until 17h00**	**No**	**No**	**Limited**	**Yes**	**Yes**	**N/A**
Music Library	**N/A**	**Yes, limited to natural light**	**No**	**No**	**Limited**	**Yes**	**Yes**	**Yes**
ICH Library	**N/A**	**Yes, until 15h00**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**N/A**
Built Environment Library	**N/A**	**Yes, until 17h00**	**No**	**No**	**Limited**	**Yes**	**Yes**	**N/A**
Bolus Herbarium Library	**N/A**	**When open and depending on natural light**	**No**	**No**	**Limited**	**Yes**	**Yes**	**N/A**
Library Learning Lounge (Snape Building)	**N/A**	**Yes until 16h00**	**No**	**No**	**No**	**No**	**No**	**N/A**

6. Teaching and Learning

a) Lighting and Ventilation

In the event of extended loadshedding, where back-up power supply is not sufficient to sustain adequate lighting and ventilation, it is crucial for the lecturer to consider alternative venues or methods. One potential solution is to open windows, blinds, and doors to allow for natural ventilation.

It is important to note that for natural ventilation to be effective, at least 25% of the area of the venue should have openable windows and doors. This will help to ensure that there is enough fresh air circulating throughout the space.

b) Cold weather

During extreme cold weather it may be necessary to take additional steps to stay warm. This could include wearing extra layers of clothing. It is important to prioritize the health and safety of everyone involved and take appropriate measures to ensure that the learning environment remains conducive.

7. Residences

- Residence access control gates and doors are fitted with UPS, which means they will continue to operate as per the type of battery back-up fitted during a power outage and dependent on usage. Where access control fails on vehicle gates during load shedding, a call needs to be logged for CPS to override the gate and again to reset the gates.
- All students in residences are provided with a portable emergency light as part of the registration process. It is each student's responsibility to keep their respective lights charged; and they are to be used during fire drills. Personal torches would also be an advantage.
- All residence front desks have been provided with a torch and a spare set of batteries as part of their emergency stock.
- Candles pose a serious safety risk and students and staff should not use them but rather use battery- or solar powered lights during load shedding.
- Meals will still be provided during a power outage, although the menu may need to be altered to accommodate the loadshedding schedule.

Annexure 1: Tips on energy saving

1) **Air-conditioning systems:** It is a good idea to turn off air-conditioning systems when they are not needed, especially in moderate temperatures when natural ventilation is sufficient. You can also consider using fans or opening windows to circulate fresh air, which can reduce energy consumption.

2) **Lights:** Turning off all unused lights and turning off lights when leaving the building can save a significant amount of energy. It is also a good idea to switch to energy-efficient light bulbs, such as LED lights, which use less energy and last longer than traditional bulbs.

3) **Natural light:** If there is sufficient natural light, you can turn off light fittings to save energy. Consider opening curtains or blinds to let in more natural light during the day, which can also improve the mood and productivity of people in the building.

4) **Equipment and appliances:** Turning off equipment and appliances when they are not in use can save a lot of energy. Make sure to unplug equipment, such as projectors, printers, and kitchenette appliances, when they are not in use, as they may still use energy even when turned off. You can also consider using energy-efficient appliances and equipment, which are designed to use less energy.

5) **Upgrade to energy-efficient appliances:** When it is time to replace appliances, consider upgrading to energy-efficient models. Look for products with the ENERGY STAR label, which meet strict energy efficiency guidelines.

6) **Reduce showering times:** Reducing showering time is important for energy savings because not only are showers one of the biggest water users, but the heating of water also requires additional energy. In fact, water heating, accounts for nearly 20% of a building's total energy use. By taking shorter showers, less hot water is used, which can lead to significant reductions in energy consumption.

Annexure 2: UCT Properties & Services Loadshedding Recommendations

For office areas and workstations, existing installations of fixed AV equipment should not be tampered with. Please direct all general loadshedding questions (not related to fixed installations) to the P&S contact email address: loadshedding@uct.ac.za.

Specific maintenance or installation requirements should be directed via the Archibus platform:

- To log any requests or incidents please use the P&S Workplace Services Portal.
- For staff requiring any assistance accessing the P&S Workplace Services Portal, they may reach out to P&S on email P&S Tech Support.

1. Portable options (self-purchase)

Rechargeable LED lantern Lights

There are various kinds of rechargeable lamps/lanterns that can be used - (e.g. Magneto, Tomu etc.) available from places like Takealot and Makro ranging from R200-R400. Please research further to find something that suits your departmental needs, quality and budget.

2. Stand-alone Plug-in Inverter / Lithium Battery Portable Units for workstations.

These are portable units that do not connect to the Building Distribution board. They can typically cover two or more laptops and last for up to four hours, depending on the specific rating of the unit.

NOTE: Try to avoid purchasing lower cost lead-acid batteries and rather select Lithium-Ion or Lithium Iron Phosphate batteries which are more reliable and longer lasting. Some examples of such units are available:

- BYD
- Solar MD
- Freedom Won
- Blue Nova
- Mecer
- Eco Flow
- Rizzen

Not Recommended: Gizzu.

Please Note:

Safety is crucial when handling batteries because batteries contain chemicals that can be hazardous if not handled properly. Batteries can produce heat, spark, or release toxic gases if they are not treated with care.

Here are some reasons why safety is important when handling batteries:

1) Chemicals in batteries: Batteries contain chemicals such as lithium, lead, sulfuric acid, and alkaline which can be harmful if they come into contact with the skin or eyes. These chemicals can cause burns or respiratory problems if inhaled.

2) Risk of explosion: Batteries can explode or catch fire if they are not handled with care. This can happen if the battery is damaged, punctured, or overheated. In extreme cases, the explosion can cause serious injuries and/or damage to property.

3) Electrical shock: Batteries store electrical energy, and if they are mishandled, they can cause electrical shock or electrocution. This can happen if the battery is short-circuited or if the user touches the electrical contacts of the battery with wet hands.

4) Environmental impact: Batteries can also have a negative impact on the environment if they are not disposed of properly. Some batteries contain toxic chemicals that can leach into the soil or water and cause pollution.

Therefore, it is important to handle batteries with care and follow the manufacturer's instructions for proper handling, storage, and disposal.

3. Standard Power banks

Standard Power banks for charging of phones and Laptops (From Takealot / Incredible Connection / Computermania) – between R200 and R600 each.

Please do your own investigations to find something that suits your departmental needs, quality and budget.

4. Points to consider when choosing a portable inverter / battery pack:

4.1 What are they?

Typically, these are portable inverter/battery packs with capacity of less than 1000Wh that plug into a wall socket. They can be used to power up small electronic devices and lights, such as laptop computers, monitors, televisions and cell phone chargers.

Options include lithium-ion / lithium iron phosphate batteries (more expensive) or lead acid/gel batteries (not recommended). The lead acid battery ones have limited battery life, especially when you use more than 50% of the charge, whereas the lithium-ion ones last much longer and the batteries can be fully discharged with no impact on the service life of the battery.

Lithium-ion batteries have been known to be a fire risk, especially when manhandled and when kept in hot locations - they can overheat and combust instantly with a very vigorous fire.

LiFePO4 batteries are better than comparable lithium-ion batteries. Lithium iron phosphate batteries are less prone to combustion and thermal runaway, making them safer for home use. Plus, a longer cycle life means the LiFePO4 batteries will outlast lithium-ion for up to five times longer.

4.2 Which unit is right for a department / unit's needs?

To calculate the capacity of such portable units, you need to know the Watt hours of the unit (Wh) you are considering purchasing.

EXAMPLE: If a portable unit is rated as a 500Wh unit, you can add up the wattage of all the devices you expect to plug in and divide this by the Wh of the unit.

If the total W of all the devices you want to plug into the unit is 500W, it will only last you 1 hour when fully charged (500Wh/500W = 1h). If the total W of your devices was 100W it would last you 5 hours (500Wh/100W = 5h).

It is also best practice not to drain the battery completely. If you choose a battery size, always select a size approximately 20% or larger than your required devices. If your devices are 500W in total, choose a ~600Wh battery or larger.

Please consider online reviews and research before purchasing. Some units have been found to be unreliable (see recent articles regarding Gizzu backup solutions, for example). Note that overheating can occur.

4.3 How do I ensure safe use of an inverter?

Follow manufacturer's instructions for storage, use, charging, and maintenance.

- When replacing batteries and chargers for an electronic device, ensure they are specifically designed and approved for use with the device, and they are purchased from the device's manufacturer, or a manufacturer authorized reseller.
- Remove lithium-powered devices and batteries from the charger once they are fully charged.
- Store lithium batteries and devices in dry, cool locations.

- Avoid damaging lithium batteries and devices. Inspect them for signs of damage, such as bulging/cracking, hissing, leaking, rising temperature, and smoking before use. Immediately remove a device or battery from service and place it in an area away from flammable materials if any of these signs are present.
- If batteries are damaged, remove them from service, place in fire resistant container (e.g., metal drum) with sand or other extinguishing agent, and dispose in accordance with UCT OHS advice or contact a local battery recycling center for disposal instructions.
- Follow the manufacturer's guidance on how to extinguish small battery fires, which could include using dry chemical extinguishers, Class D fire extinguishers (for lithium-metal), dirt, or sand.
- There should be a central recording of location and type of battery back-up used per department/Faculty. A responsible person per department or building should be appointed and this should be recorded at the respective Departmental/ Faculty OHS committee meetings.

4.4 Fixed inverters, generators, and batteries

Commercial diesel generators that are typically installed across campuses can cost between R 500,000 and R 3 million, depending on the size of the units and includes lengthy City of Cape Town approval period. It is also worth noting that due to the National State of Disaster on electricity supply in South Africa, the availability of diesel generators has declined and waiting periods for commercial generators can be between 4 to 5 months.

Alternatively, if departmental funding is available, procurement of 5kW-10kW for fixed inverters and batteries that will cost between R100,000 and R200,000, which could typically power up a few offices or a teaching space (excluding air-conditioning / ventilation / heating).

Cost and performance are highly dependent on which circuits are connected (eg. Lights, projectors, projectors, lighting, lecterns, network points, PDU cabinets, speakers, wireless networks, and fire protection systems etc.). Installation will require an assessment by a professional electrical engineer and subsequent specification and design. These options would need to be funded by the department and logged as a P&S project via the Archibus platform.

Please direct all general loadshedding questions to the P&S contact email address: loadshedding@uct.ac.za .

To log any installation requests please use the P&S Workplace Services Portal.

When Eskom Turns The Power Off...

We Keep Going. Here's How

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Annexure 3: Process Flow