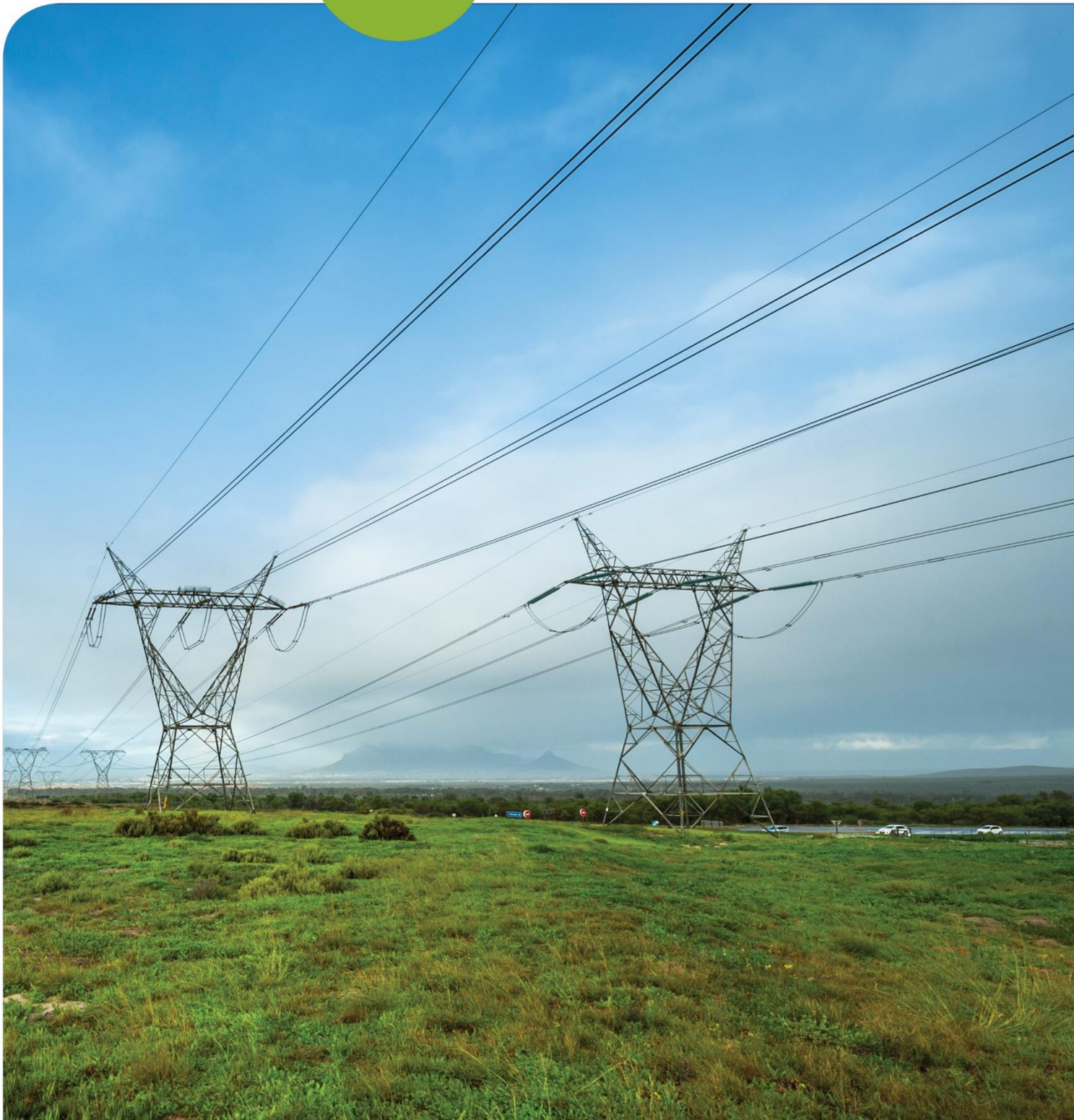




Western Cape
Government



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD



Load Shedding Fact Sheet

December 2019

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1 What is load shedding?

Load shedding is an energy utility's method of reducing demand on the energy generation system by temporarily switching off the distribution of energy to certain geographical areas.

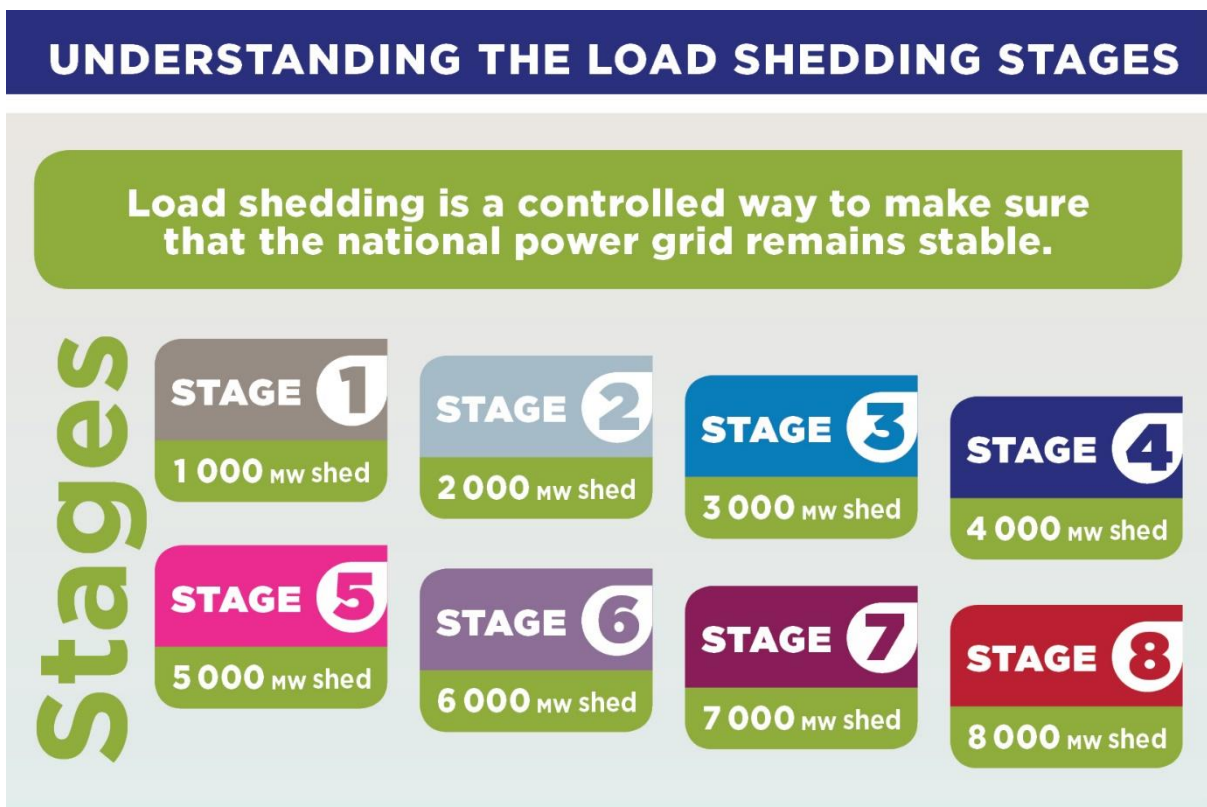
Load shedding is only applied when the system has insufficient capacity to fulfil all energy demands and is undertaken to optimally manage the energy that is still available in order to maintain system stability. It is undertaken on a rotational basis to distribute the impacts.

If load shedding is required, Eskom's National Control Centre instructs its stakeholders (i.e. the municipalities and customers that it sells electricity to) on the stage of load shedding required. The duration of load shedding will depend on the specific supplier (Eskom or municipality), region and circumstances.¹

2 Why are we experiencing load shedding?

The current bout of load shedding is related to inadequate national energy supply to meet demand. This is mainly due to a large amount of unplanned maintenance required at Eskom's aging coal-fired power stations. In addition, the new energy generation units at Medupi and Kusile have faced challenges in bringing the units online.

3 What are the different stages of load shedding?



¹ Eskom website

PRINCIPLES OF THE STAGES



The **higher** the **load shedding stage**, the **more frequently** you will experience load shedding.



The **higher** the **stage**, the **greater** the **number** of **customers** that will be affected across the country at any one time.



Generally load shedding in **stage 8** will result in customers having electricity for **50%** of the day.

How does it work?

- 1** Eskom decides on the load shedding stage depending on the number of megawatts needed to **balance** the power grid.
- 2** Eskom and the municipalities then implement load shedding on a **rotational basis**, based on the schedules developed.
- 3** Load shedding is done for **2-4 hours depending on the schedule for your area**.

Originally adapted from Eskom https://m.facebook.com/story.php?story_fbid=3264112613615460&id=652838731409541

Load shedding is implemented in stages and depends on the extent of the shortage of electricity generation, with each stage requiring more energy to be shed. In the Western Cape, the scheduled electricity outages generally last for about 2.5 hours, while in other parts of the country outages can last up to 4.5 hours. Advanced stages can mean more frequent and longer power outages. Municipalities only implement load shedding on their grids when instructed to do so by Eskom's National Control Centre. The decision to implement load shedding is therefore beyond municipal control and often at short notice.²

4 Are municipalities able to avoid load shedding?

It would be difficult for municipalities to avoid load shedding altogether as they receive electricity through the national grid controlled by Eskom and most of them do not have their own alternative sources of electricity.

The City of Cape Town is often able to reduce the impact of load shedding due to the operation of its 180MW hydroelectric plant at the Steenbras Dam, which is normally used for 'peak lopping'.³ Steenbras Dam is currently, however, undergoing significant refurbishment and is therefore offline.

² City of Cape Town Load Shedding FAQs June 2019

³ City of Cape Town Load Shedding FAQs June 2019

5 Where can you find the load shedding schedule?

This depends on who provides your electricity:

- Eskom Customers: <http://loadshedding.eskom.co.za/>
- City of Cape Town customers: <https://www.capetown.gov.za/loadshedding>
- Western Cape municipal load shedding schedules can be found here: <http://www.eskom.co.za/CustomerCare/Towns/Pages/Western-Cape.aspx>

6 Why are some areas/streets excluded from load shedding in Cape Town?

The City of Cape Town is guided by the national standard for load shedding, referred to as Regulation NRS048-9. This regulation sets out the following criteria for the implementation of load shedding:

- the safety of people
- the safety of the environment
- the potential damage to plants associated with a critical national product (e.g. wastewater treatment works)
- technical constraints on executing load shedding

In order to maintain electricity supply for critical functions / services, load curtailment (where demand is reduced) by certain users is implemented for the duration of load shedding. Some residents and businesses may not experience load shedding if their properties share a dedicated circuit with these.⁴

These areas are however not entirely immune from the possibility of load shedding and this situation could change.

7 What is being done to mitigate the impact of load shedding on the local economy?

In the Western Cape we are committed to mitigating, as far as possible, the negative impacts of load shedding on our local economy and will work together with industry to find local solutions that will help the region to insulate the economy from some of load shedding's worst impacts.

The Energy Security Game Changer, run by the Western Cape government, together with Eskom, City of Cape Town, Wesgro, EDP and GreenCape have been engaging with business groups to build their resilience against the risk of load shedding and advising on implementable mitigation measures.

⁴ City of Cape Town Load Shedding FAQs June 2019

The City of Cape Town has been exploring load curtailment zones in a few industrial areas. Load curtailment can be implemented for:

- large customers that are supplied directly at main station level; or
- industrial / commercial users that collaborate to achieve the load reduction at the main station level.

The load curtailment needs to be maintained for the full duration of the load shedding period (from when load shedding is announced until it is suspended) and must be:

- 10 % of normal main station load under stages 1 and 2
- 15 % of normal main station load under stage 3
- 20 % of normal main station load under stage 4

8 How can your business reduce the impact of load shedding?

Businesses experience different impacts depending on the nature of their business, and load shedding mitigation measures should therefore be designed to best suit the business.

For office-based businesses, it is generally sufficient to install a battery back-up for computers and WiFi, and possibly a larger battery back-up to cover lighting and other needs. If laptops are being used, it significantly decreases the required size of a battery back-up.

If the business has significant roof space, a solar PV system plus battery back-up is a good option. Remember that solar PV systems shut down during load shedding, so if you have a PV system or are considering installing one, adding a storage component makes sense for times of load shedding.

Generators are also an option, but they have significant drawbacks (see below).

The Western Cape Government has provided a list of technologies and estimated prices that you can consider, in relation to how much power you will need during load shedding. This is particularly appropriate for homes, small businesses, and some commercial enterprises. A "Preparing for Load Shedding" document can be found [here](#).

9 Generators versus energy storage

Many businesses rely on generators during load shedding. While the upfront cost for small businesses is relatively low, they are expensive to run in the long term owing to the cost of diesel (which could increase with increasing demand), and there must be sufficient safe storage for the diesel on the premises.

Another option is energy storage, which is usually in the form of batteries. This is generally viewed as being an expensive option. However, lithium-ion batteries decreased in price by 35% globally in the past year, and prices will continue to fall. Even though technologies like lithium-ion may

appear to be expensive, they carry additional financial and operational benefits that you don't get with generators, such as:

- Minimal maintenance and no requirement for fuel (as with generators);
- The ability to regulate the frequency of the power supply, which is advisable for certain kinds of machinery;
- The ability to store power and then discharge the power when electricity consumption reaches a certain level. You can thereby reduce Notified Maximum Demand charges (which can be a significant monthly cost); and
- The ability to shift your load from peak times to off-peak times, if you are on Time-of-Use billing that charges you much more during peak times.

Once all these use cases are stacked up, your business may have a compelling business case to invest in batteries rather than generators.

10 What is being done to build resilience and energy security in the Western Cape?

Energy Security has been identified by the Western Cape Government as a key enabler for economic growth. Since 2015, the Energy Security Game Changer between the Western Cape Government and City of Cape Town has been working with partners to create an energy secure province through encouraging the uptake of sustainable and low-carbon energy sources.

The Western Cape Government has been leading by example by reducing electricity consumption in its buildings by 13% since 2015, resulting in its energy consumption being 38% below the industry benchmark. WCG has also invested over R40 million in solar PV on provincially-owned buildings, expecting a cost saving of 10% per year.

In 2015, only two municipalities allowed Small Scale Embedded Generation (SSEG / rooftop solar PV). Through working with municipalities, 23 now allow SSEG, with 18 of these also having regulator-approved feed-in tariffs (where you can be compensated for feeding excess electricity back into the grid). This has led to approximately 120 MW of SSEG being installed across the province to date. This pioneering work being has been adopted across the country. To complement this, we have been supporting and working towards decreasing the costs of solar PV installations through smart meter standards development and solar PV installer training.

Wheeling, which will allow independent generators to sell electricity directly to electricity consumers embedded in the electricity grid, would also assist to alleviate the pressure on the grid and encourage the uptake of solar PV. A wheeling framework and policy are being developed by the City of Cape Town and once in place, through support from the Western Cape Government, will be rolled out to local municipalities.

The Western Cape Government has been driving the importation of Liquefied Natural Gas (LNG) through Saldanha Bay to support gas-based industrialisation and as a cleaner fuel source. Since the prefeasibility study in 2013, a number of studies have been completed including the latest feasibility study which supports the development of marine, pipeline and gas-to-power

infrastructure. The Province is working with national stakeholders as well as the private sector on taking this initiative forward.

11 Are there options to reduce reliance on Eskom?

It is critical for our municipalities to be able diversify their supply of electricity. One way would be to allow wheeling on the network, which is being developed, and another would be to purchase electricity directly from independent power producers (IPPs). Government policy currently allows IPPs to sell electricity only to Eskom, which is controlled through the issuing of generation licences.

The City of Cape Town has a court case underway to challenge the Minister of Energy and the National Energy Regulator of South Africa (Nersa) for the right to purchase renewable energy directly from IPPs. In light of the current load shedding crisis, the City of Cape Town intends seeking permission from the Judge President of the Gauteng High Court for an expedited hearing on the case (the hearing date is currently scheduled for May 2020).

Department of Economic Development and Tourism

Email: 110green@westerncape.gov.za

www.westerncape.gov.za



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